Intersection	
Int Delay, s/veh	1.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	131	11	17	302	32	51
Future Vol, veh/h	131	11	17	302	32	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	305	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	154	13	20	355	38	60

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	167	0	549	154
Stage 1	-	-	-	-	154	-
Stage 2	-	-	-	-	395	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1411	-	497	892
Stage 1	-	-	-	-	874	-
Stage 2	-	-	-	-	681	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1411	-	490	892
Mov Cap-2 Maneuver	-	-	-	-	554	-
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	681	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	10.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	554	892	-	-	1411	-
HCM Lane V/C Ratio	0.068	0.067	-	-	0.014	-
HCM Control Delay (s)	12	9.3	-	-	7.6	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	143	39	35	202	117	104
Future Vol, veh/h	143	39	35	202	117	104
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	305	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	168	46	41	238	138	122

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	214	0	488	168
Stage 1	-	-	-	-	168	-
Stage 2	-	-	-	-	320	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1356	-	539	876
Stage 1	-	-	-	-	862	-
Stage 2	-	-	-	-	736	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1356	-	523	876
Mov Cap-2 Maneuver	-	-	-	-	579	-
Stage 1	-	-	-	-	836	-
Stage 2	-	-	-	-	736	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.1	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	579	876	-	-	1356	-
HCM Lane V/C Ratio	0.238	0.14	-	-	0.03	-
HCM Control Delay (s)	13.1	9.8	-	-	7.7	-
HCM Lane LOS	B	A	-	-	A	-
HCM 95th %tile Q(veh)	0.9	0.5	-	-	0.1	-

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	21	225	171	34	101	65
Future Vol, veh/h	21	225	171	34	101	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	405	-	-	155	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	25	265	201	40	119	76

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	241	0	-	0	516	201
Stage 1	-	-	-	-	201	-
Stage 2	-	-	-	-	315	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1326	-	-	-	519	840
Stage 1	-	-	-	-	833	-
Stage 2	-	-	-	-	740	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1326	-	-	-	509	840
Mov Cap-2 Maneuver	-	-	-	-	577	-
Stage 1	-	-	-	-	817	-
Stage 2	-	-	-	-	740	-

Approach	EB	WB	SB
HCM Control Delay, s	0.7	0	11.6
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1326	-	-	-	577	840
HCM Lane V/C Ratio	0.019	-	-	-	0.206	0.091
HCM Control Delay (s)	7.8	-	-	-	12.9	9.7
HCM Lane LOS	A	-	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8	0.3

Intersection	
Int Delay, s/veh	6.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	293	34	79	104	101	236
Future Vol, veh/h	293	34	79	104	101	236
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	405	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	345	40	93	122	119	278

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	385	0	653	345
Stage 1	-	-	-	-	345	-
Stage 2	-	-	-	-	308	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1173	-	432	698
Stage 1	-	-	-	-	717	-
Stage 2	-	-	-	-	745	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1173	-	398	698
Mov Cap-2 Maneuver	-	-	-	-	481	-
Stage 1	-	-	-	-	660	-
Stage 2	-	-	-	-	745	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.6	13.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	481	698	-	-	1173	-
HCM Lane V/C Ratio	0.247	0.398	-	-	0.079	-
HCM Control Delay (s)	14.9	13.5	-	-	8.3	-
HCM Lane LOS	B	B	-	-	A	-
HCM 95th %tile Q(veh)	1	1.9	-	-	0.3	-

Intersection	
Intersection Delay, s/veh	6.7
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	385	215	397
Demand Flow Rate, veh/h	393	219	405
Vehicles Circulating, veh/h	95	121	352
Vehicles Exiting, veh/h	245	636	136
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	5.8	4.6	8.6
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	393	219	405
Cap Entry Lane, veh/h	1252	1220	964
Entry HV Adj Factor	0.980	0.980	0.980
Flow Entry, veh/h	385	215	397
Cap Entry, veh/h	1227	1195	945
V/C Ratio	0.314	0.180	0.420
Control Delay, s/veh	5.8	4.6	8.6
LOS	A	A	A
95th %tile Queue, veh	1	1	2

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	44	485	162	318	615	21
Future Vol, veh/h	44	485	162	318	615	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	100	0	800	-	-	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	48	527	176	346	668	23

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1366	-	691	0	-	0
Stage 1	668	-	-	-	-	-
Stage 2	698	-	-	-	-	-
Critical Hdwy	6.42	-	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	-	2.218	-	-	-
Pot Cap-1 Maneuver	162	0	904	-	-	-
Stage 1	510	0	-	-	-	-
Stage 2	494	0	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	130	-	904	-	-	-
Mov Cap-2 Maneuver	222	-	-	-	-	-
Stage 1	411	-	-	-	-	-
Stage 2	494	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	25.6	3.4	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	904	-	222	-	-	-
HCM Lane V/C Ratio	0.195	-	0.215	-	-	-
HCM Control Delay (s)	9.9	-	25.6	0	-	-
HCM Lane LOS	A	-	D	A	-	-
HCM 95th %tile Q(veh)	0.7	-	0.8	-	-	-

Intersection	
Int Delay, s/veh	10.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	39	443	441	94	276	109
Future Vol, veh/h	39	443	441	94	276	109
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	400	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	46	521	519	111	325	128

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1474	325	453	0	-	0
Stage 1	325	-	-	-	-	-
Stage 2	1149	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	139	716	1108	-	-	-
Stage 1	732	-	-	-	-	-
Stage 2	302	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	74	716	1108	-	-	-
Mov Cap-2 Maneuver	~ -3438	-	-	-	-	-
Stage 1	389	-	-	-	-	-
Stage 2	302	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.8	9.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1108	-	+	716	-	-
HCM Lane V/C Ratio	0.468	-	-	0.728	-	-
HCM Control Delay (s)	11.1	-	4	22.3	-	-
HCM Lane LOS	B	-	A	C	-	-
HCM 95th %tile Q(veh)	2.6	-	-	6.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	9.2
Intersection LOS	A

Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	567	630	453
Demand Flow Rate, veh/h	578	642	463
Vehicles Circulating, veh/h	331	47	529
Vehicles Exiting, veh/h	660	862	160
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	10.1	7.4	10.8
Approach LOS	B	A	B

Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	578	642	463
Cap Entry Lane, veh/h	1072	1364	906
Entry HV Adj Factor	0.981	0.981	0.979
Flow Entry, veh/h	567	630	453
Cap Entry, veh/h	1051	1339	887
V/C Ratio	0.539	0.471	0.511
Control Delay, s/veh	10.1	7.4	10.8
LOS	B	A	B
95th %tile Queue, veh	3	3	3

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	39	443	441	94	276	109
Future Volume (vph)	39	443	441	94	276	109
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	70.0	70.0	70.0	70.0
Total Split (%)	22.2%	22.2%	77.8%	77.8%	77.8%	77.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
Act Effct Green (s)	9.1	9.1	65.1	65.1	65.1	65.1
Actuated g/C Ratio	0.11	0.11	0.77	0.77	0.77	0.77
v/c Ratio	0.24	0.82	0.64	0.08	0.23	0.10
Control Delay	36.8	15.1	9.6	3.0	3.5	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	36.8	15.1	9.6	3.0	3.5	0.9
LOS	D	B	A	A	A	A
Approach Delay	16.9			8.5	2.7	
Approach LOS	B			A	A	

Intersection Summary

Cycle Length: 90
Actuated Cycle Length: 84.2
Natural Cycle: 60
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 9.8 — Intersection LOS: A
Intersection Capacity Utilization 55.6% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 12: Eastonville Rd & Londonderry Dr

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	45	260	123	37	157	112	45	377	17	209	366	145
Future Vol, veh/h	45	260	123	37	157	112	45	377	17	209	366	145
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	250	0	-	-	400	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	52	299	141	43	180	129	52	433	20	227	398	158

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1633	1488	477	1698	1557	443	556	0	0	453	0	0
Stage 1	931	931	-	547	547	-	-	-	-	-	-	-
Stage 2	702	557	-	1151	1010	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	81	~ 124	588	73	~ 113	615	1015	-	-	1108	-	-
Stage 1	320	346	-	521	517	-	-	-	-	-	-	-
Stage 2	429	512	-	241	317	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 93	588	-	~ 85	615	1015	-	-	1108	-	-
Mov Cap-2 Maneuver	-	~ 93	-	-	~ 85	-	-	-	-	-	-	-
Stage 1	304	~ 275	-	494	491	-	-	-	-	-	-	-
Stage 2	204	486	-	-	252	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			0.9	2.6
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1015	-	-	-	-	615	1108	-	-
HCM Lane V/C Ratio	0.051	-	-	-	-	0.209	0.205	-	-
HCM Control Delay (s)	8.7	-	-	-	-	12.4	9.1	-	-
HCM Lane LOS	A	-	-	-	-	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-	-	0.8	0.8	-	-

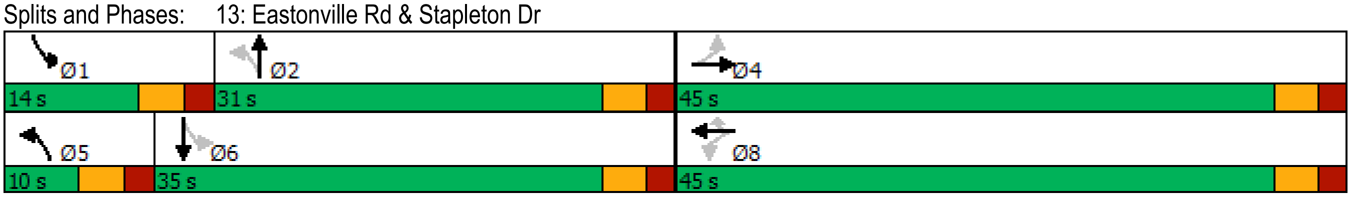
Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	45	260	37	157	112	45	377	209	366
Future Volume (vph)	45	260	37	157	112	45	377	209	366
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	45.0	45.0	45.0	45.0	45.0	10.0	31.0	14.0	35.0
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%	11.1%	34.4%	15.6%	38.9%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)		25.8		25.8	25.8	27.4	22.2	36.1	31.3
Actuated g/C Ratio		0.35		0.35	0.35	0.38	0.31	0.50	0.43
v/c Ratio		0.80		0.41	0.20	0.17	0.80	0.61	0.71
Control Delay		30.5		20.2	4.0	13.6	36.8	21.3	26.8
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		30.5		20.2	4.0	13.6	36.8	21.3	26.8
LOS		C		C	A	B	D	C	C
Approach Delay		30.5		14.3			34.4		25.2
Approach LOS		C		B			C		C

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 72.7	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 26.8	Intersection LOS: C
Intersection Capacity Utilization 83.1%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	58	156	399	2	74	23	177	399	1	63	999	41
Future Vol, veh/h	58	156	399	2	74	23	177	399	1	63	999	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Free	-	-	Free	-	-	None	-	-	None
Storage Length	185	-	325	225	-	225	1000	-	0	785	-	785
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	83	83	83	92	92	92	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	63	170	434	2	89	28	192	434	1	68	1074	44

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2073	2029	-	2135	2072	-	1118	0	0	435	0	0
Stage 1	1210	1210	-	818	818	-	-	-	-	-	-	-
Stage 2	863	819	-	1317	1254	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	-	7.12	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 40	~ 57	0	36	~ 54	0	625	-	-	1125	-	-
Stage 1	223	255	0	370	390	0	-	-	-	-	-	-
Stage 2	349	389	0	194	243	0	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 37	-	-	~ 35	-	625	-	-	1125	-	-
Mov Cap-2 Maneuver	-	~ 37	-	-	~ 35	-	-	-	-	-	-	-
Stage 1	155	240	-	256	270	-	-	-	-	-	-	-
Stage 2	162	270	-	53	228	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			4.1	0.5
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	625	-	-	-	37	-	-	35	-	1125	-	-
HCM Lane V/C Ratio	0.308	-	-	-	4.583	-	-	2.547	-	0.06	-	-
HCM Control Delay (s)	13.3	-	-		$ 1830.7	0		$ 945	0	8.4	-	-
HCM Lane LOS	B	-	-	-	F	A	-	F	A	A	-	-
HCM 95th %tile Q(veh)	1.3	-	-	-	19.8	-	-	10.1	-	0.2	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	58	156	399	2	74	23	177	399	1	63	999	41
Future Volume (vph)	58	156	399	2	74	23	177	399	1	63	999	41
Turn Type	Perm	NA	Free	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		Free	8		8	2		2	6		6
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	20.0	20.0		20.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0
Total Split (s)	25.0	25.0		25.0	25.0	25.0	12.0	55.0	55.0	10.0	53.0	53.0
Total Split (%)	27.8%	27.8%		27.8%	27.8%	27.8%	13.3%	61.1%	61.1%	11.1%	58.9%	58.9%
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	12.8	12.8	82.9	12.8	12.8	12.8	57.7	51.2	51.2	53.1	47.1	47.1
Actuated g/C Ratio	0.15	0.15	1.00	0.15	0.15	0.15	0.70	0.62	0.62	0.64	0.57	0.57
v/c Ratio	0.32	0.59	0.27	0.01	0.31	0.09	0.81	0.38	0.00	0.11	1.02	0.05
Control Delay	35.1	41.3	0.4	29.0	33.6	0.5	43.4	10.4	0.0	4.7	52.3	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.1	41.3	0.4	29.0	33.6	0.5	43.4	10.4	0.0	4.7	52.3	0.6
LOS	D	D	A	C	C	A	D	B	A	A	D	A
Approach Delay		14.1			25.8			20.5			47.6	
Approach LOS		B			C			C			D	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 82.9	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 31.5	Intersection LOS: C
Intersection Capacity Utilization 85.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 14: US 24 & Stapleton Dr

Intersection	
Int Delay, s/veh	4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↰	↱	↑	↱	↰	↑
Traffic Vol, veh/h	198	18	28	333	28	24
Future Vol, veh/h	198	18	28	333	28	24
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	233	21	33	392	33	28

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	127	33	0	0	425	0
Stage 1	33	-	-	-	-	-
Stage 2	94	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	868	1041	-	-	1134	-
Stage 1	989	-	-	-	-	-
Stage 2	930	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	843	1041	-	-	1134	-
Mov Cap-2 Maneuver	843	-	-	-	-	-
Stage 1	960	-	-	-	-	-
Stage 2	930	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	10.7	0	4.5
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	843	1041	1134	-
HCM Lane V/C Ratio	-	-	0.276	0.02	0.029	-
HCM Control Delay (s)	-	-	10.9	8.5	8.3	-
HCM Lane LOS	-	-	B	A	A	-
HCM 95th %tile Q(veh)	-	-	1.1	0.1	0.1	-

Intersection	
Int Delay, s/veh	0.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	349	17	27	209	10	16
Future Vol, veh/h	349	17	27	209	10	16
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	205	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	411	20	32	246	12	19

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	431	0	731	421
Stage 1	-	-	-	-	421	-
Stage 2	-	-	-	-	310	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1129	-	389	632
Stage 1	-	-	-	-	662	-
Stage 2	-	-	-	-	744	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1129	-	378	632
Mov Cap-2 Maneuver	-	-	-	-	480	-
Stage 1	-	-	-	-	643	-
Stage 2	-	-	-	-	744	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	480	632	-	-	1129	-
HCM Lane V/C Ratio	0.025	0.03	-	-	0.028	-
HCM Control Delay (s)	12.7	10.9	-	-	8.3	-
HCM Lane LOS	B	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.1	-	-	0.1	-

Intersection	
Int Delay, s/veh	1.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	330	35	54	216	20	32
Future Vol, veh/h	330	35	54	216	20	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	305	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	388	41	64	254	24	38

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	429	0	770	388
Stage 1	-	-	-	-	388	-
Stage 2	-	-	-	-	382	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1130	-	369	660
Stage 1	-	-	-	-	686	-
Stage 2	-	-	-	-	690	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1130	-	348	660
Mov Cap-2 Maneuver	-	-	-	-	449	-
Stage 1	-	-	-	-	647	-
Stage 2	-	-	-	-	690	-

Approach	EB		WB		NB	
HCM Control Delay, s	0		1.7		11.8	
HCM LOS					B	

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	449	660	-	-	1130	-
HCM Lane V/C Ratio	0.052	0.057	-	-	0.056	-
HCM Control Delay (s)	13.5	10.8	-	-	8.4	-
HCM Lane LOS	B	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0.2	-

Intersection	
Int Delay, s/veh	3.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	↱	↰	↑	↰	↱
Traffic Vol, veh/h	237	125	111	196	74	65
Future Vol, veh/h	237	125	111	196	74	65
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	305	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	279	147	131	231	87	76

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	426	0	772	279
Stage 1	-	-	-	-	279	-
Stage 2	-	-	-	-	493	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1133	-	368	760
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	614	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1133	-	325	760
Mov Cap-2 Maneuver	-	-	-	-	396	-
Stage 1	-	-	-	-	679	-
Stage 2	-	-	-	-	614	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.1	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	396	760	-	-	1133	-
HCM Lane V/C Ratio	0.22	0.101	-	-	0.115	-
HCM Control Delay (s)	16.6	10.3	-	-	8.6	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.8	0.3	-	-	0.4	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	69	233	267	109	63	41
Future Vol, veh/h	69	233	267	109	63	41
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	405	-	-	155	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	81	274	314	128	74	48

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	442	0	-	0	750	314
Stage 1	-	-	-	-	314	-
Stage 2	-	-	-	-	436	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1118	-	-	-	379	726
Stage 1	-	-	-	-	741	-
Stage 2	-	-	-	-	652	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1118	-	-	-	352	726
Mov Cap-2 Maneuver	-	-	-	-	442	-
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	652	-

Approach	EB	WB	SB
HCM Control Delay, s	1.9	0	13
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1118	-	-	-	442	726
HCM Lane V/C Ratio	0.073	-	-	-	0.168	0.066
HCM Control Delay (s)	8.5	-	-	-	14.8	10.3
HCM Lane LOS	A	-	-	-	B	B
HCM 95th %tile Q(veh)	0.2	-	-	-	0.6	0.2

Intersection	
Int Delay, s/veh	29

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	183	108	253	309	63	149
Future Vol, veh/h	183	108	253	309	63	149
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	405	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	215	127	298	364	74	175

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	342	0	1175	215
Stage 1	-	-	-	-	215	-
Stage 2	-	-	-	-	960	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1217	-	212	825
Stage 1	-	-	-	-	821	-
Stage 2	-	-	-	-	372	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1217	-	160	825
Mov Cap-2 Maneuver	-	-	-	-	~ 50	-
Stage 1	-	-	-	-	620	-
Stage 2	-	-	-	-	372	-

Approach	EB	WB	NB
HCM Control Delay, s	0	4	135.2
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	50	825	-	-	1217	-
HCM Lane V/C Ratio	1.482	0.212	-	-	0.245	-
HCM Control Delay (s)	$ 430.1	10.5	-	-	8.9	-
HCM Lane LOS	F	B	-	-	A	-
HCM 95th %tile Q(veh)	7	0.8	-	-	1	-

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Intersection Delay, s/veh	7.6
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	342	662	249
Demand Flow Rate, veh/h	349	675	253
Vehicles Circulating, veh/h	304	75	219
Vehicles Exiting, veh/h	446	397	434
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.3	8.7	5.4
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	349	675	253
Cap Entry Lane, veh/h	1012	1278	1104
Entry HV Adj Factor	0.979	0.980	0.984
Flow Entry, veh/h	342	662	249
Cap Entry, veh/h	991	1253	1086
V/C Ratio	0.345	0.528	0.229
Control Delay, s/veh	7.3	8.7	5.4
LOS	A	A	A
95th %tile Queue, veh	2	3	1

Intersection	
Int Delay, s/veh	4.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	27	305	520	578	444	42
Future Vol, veh/h	27	305	520	578	444	42
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Free	-	None	-	None
Storage Length	100	0	800	-	-	800
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	29	332	565	628	483	46

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2241	-	529	0	-	0
Stage 1	483	-	-	-	-	-
Stage 2	1758	-	-	-	-	-
Critical Hdwy	6.42	-	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	-	2.218	-	-	-
Pot Cap-1 Maneuver	46	0	1038	-	-	-
Stage 1	620	0	-	-	-	-
Stage 2	152	0	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 21	-	1038	-	-	-
Mov Cap-2 Maneuver	624	-	-	-	-	-
Stage 1	283	-	-	-	-	-
Stage 2	152	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.1	5.9	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1038	-	624	-	-	-
HCM Lane V/C Ratio	0.545	-	0.047	-	-	-
HCM Control Delay (s)	12.5	-	11.1	0	-	-
HCM Lane LOS	B	-	B	A	-	-
HCM 95th %tile Q(veh)	3.4	-	0.1	-	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s   +: Computation Not Defined   *: All major volume in platoon

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	94	257	451	307	182	62
Future Vol, veh/h	94	257	451	307	182	62
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	400	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	111	302	531	361	214	73

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1637	214	287	0	-	0
Stage 1	214	-	-	-	-	-
Stage 2	1423	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	111	826	1275	-	-	-
Stage 1	822	-	-	-	-	-
Stage 2	222	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 65	826	1275	-	-	-
Mov Cap-2 Maneuver	~ -3386	-	-	-	-	-
Stage 1	480	-	-	-	-	-
Stage 2	222	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.8	5.8	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1275	-	+	826	-	-
HCM Lane V/C Ratio	0.416	-	-	0.366	-	-
HCM Control Delay (s)	9.8	-	4	11.9	-	-
HCM Lane LOS	A	-	A	B	-	-
HCM 95th %tile Q(veh)	2.1	-	-	1.7	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	10.3
Intersection LOS	B

Approach	EB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	413	892	287
Demand Flow Rate, veh/h	421	910	292
Vehicles Circulating, veh/h	218	113	542
Vehicles Exiting, veh/h	616	526	481
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.6	12.9	7.7
Approach LOS	A	B	A

Lane	Left	Left	Left
Designated Moves	LR	LT	TR
Assumed Moves	LR	LT	TR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	421	910	292
Cap Entry Lane, veh/h	1180	1290	896
Entry HV Adj Factor	0.981	0.980	0.982
Flow Entry, veh/h	413	892	287
Cap Entry, veh/h	1157	1264	880
V/C Ratio	0.357	0.705	0.326
Control Delay, s/veh	6.6	12.9	7.7
LOS	A	B	A
95th %tile Queue, veh	2	6	1

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	94	257	451	307	182	62
Future Volume (vph)	94	257	451	307	182	62
Turn Type	Prot	Perm	Perm	NA	NA	Perm
Protected Phases	4			2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	70.0	70.0	70.0	70.0
Total Split (%)	22.2%	22.2%	77.8%	77.8%	77.8%	77.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
Act Effct Green (s)	10.6	10.6	65.1	65.1	65.1	65.1
Actuated g/C Ratio	0.12	0.12	0.76	0.76	0.76	0.76
v/c Ratio	0.51	0.66	0.60	0.26	0.15	0.06
Control Delay	43.2	11.8	8.7	3.9	3.4	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.2	11.8	8.7	3.9	3.4	1.0
LOS	D	B	A	A	A	A
Approach Delay	20.2			6.8	2.8	
Approach LOS	C			A	A	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 85.7	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 9.5	Intersection LOS: A
Intersection Capacity Utilization 52.3%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 12: Eastonville Rd & Londonderry Dr

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	145	199	82	32	341	250	130	362	53	112	230	97
Future Vol, veh/h	145	199	82	32	341	250	130	362	53	112	230	97
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	250	0	-	-	400	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	167	229	94	37	392	287	149	416	61	122	250	105

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1631	1322	303	1453	1344	447	355	0	0	477	0	0
Stage 1	547	547	-	745	745	-	-	-	-	-	-	-
Stage 2	1084	775	-	708	599	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 81	~ 156	737	108	~ 152	612	1204	-	-	1085	-	-
Stage 1	521	517	-	406	421	-	-	-	-	-	-	-
Stage 2	263	408	-	426	490	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 121	737	-	~ 118	612	1204	-	-	1085	-	-
Mov Cap-2 Maneuver	-	~ 121	-	-	~ 118	-	-	-	-	-	-	-
Stage 1	456	459	-	356	~ 369	-	-	-	-	-	-	-
Stage 2	-	357	-	165	435	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			2	2.2
HCM LOS	-	-		

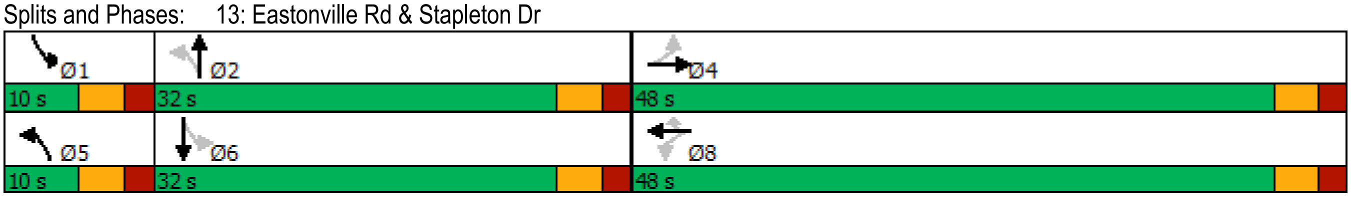
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1204	-	-	-	-	612	1085	-	-
HCM Lane V/C Ratio	0.124	-	-	-	-	0.47	0.112	-	-
HCM Control Delay (s)	8.4	-	-	-	-	16	8.7	-	-
HCM Lane LOS	A	-	-	-	-	C	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	-	-	2.5	0.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations									
Traffic Volume (vph)	145	199	32	341	250	130	362	112	230
Future Volume (vph)	145	199	32	341	250	130	362	112	230
Turn Type	Perm	NA	Perm	NA	Perm	pm+pt	NA	pm+pt	NA
Protected Phases		4		8		5	2	1	6
Permitted Phases	4		8		8	2		6	
Detector Phase	4	4	8	8	8	5	2	1	6
Switch Phase									
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	48.0	48.0	48.0	48.0	48.0	10.0	32.0	10.0	32.0
Total Split (%)	53.3%	53.3%	53.3%	53.3%	53.3%	11.1%	35.6%	11.1%	35.6%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)		5.0		5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						Lead	Lag	Lead	Lag
Lead-Lag Optimize?						Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None
Act Effct Green (s)		42.9		42.9	42.9	30.2	25.2	30.2	25.2
Actuated g/C Ratio		0.49		0.49	0.49	0.34	0.29	0.34	0.29
v/c Ratio		0.95		0.51	0.31	0.55	0.90	0.66	0.67
Control Delay		53.0		18.5	2.7	27.0	52.3	37.3	33.0
Queue Delay		0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay		53.0		18.5	2.7	27.0	52.3	37.3	33.0
LOS		D		B	A	C	D	D	C
Approach Delay		53.0		12.2			46.3		34.1
Approach LOS		D		B			D		C

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 88.2	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 34.6	Intersection LOS: C
Intersection Capacity Utilization 88.3%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Intersection	
Int Delay, s/veh	2.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	31	126	234	4	178	63	451	1007	21	29	607	117
Future Vol, veh/h	31	126	234	4	178	63	451	1007	21	29	607	117
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	Free	-	-	Free	-	-	None	-	-	None
Storage Length	185	-	325	225	-	225	1000	-	0	785	-	785
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	83	83	83	92	92	92	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	34	137	254	5	214	76	490	1095	23	31	653	126

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2909	2813	-	2922	2916	-	779	0	0	1118	0	0
Stage 1	715	715	-	2075	2075	-	-	-	-	-	-	-
Stage 2	2194	2098	-	847	841	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	-	7.12	6.52	-	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	-	3.518	4.018	-	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 10	~ 18	0	10	~ 15	0	838	-	-	625	-	-
Stage 1	422	434	0	70	~ 96	0	-	-	-	-	-	-
Stage 2	60	~ 93	0	357	380	0	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 7	-	-	~ 6	-	838	-	-	625	-	-
Mov Cap-2 Maneuver	-	~ 7	-	-	~ 6	-	-	-	-	-	-	-
Stage 1	175	412	-	29	~ 40	-	-	-	-	-	-	-
Stage 2	-	~ 39	-	227	361	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			4.6	0.4
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	838	-	-	-	7	-	-	6	-	625	-	-
HCM Lane V/C Ratio	0.585	-	-	-	19.565	-	-	35.743	-	0.05	-	-
HCM Control Delay (s)	15.2	-	-		$ 9384.4	0		$ 16834	0	11.1	-	-
HCM Lane LOS	C	-	-	-	F	A	-	F	A	B	-	-
HCM 95th %tile Q(veh)	3.9	-	-	-	19	-	-	28.8	-	0.2	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	126	234	4	178	63	451	1007	21	29	607	117
Future Volume (vph)	31	126	234	4	178	63	451	1007	21	29	607	117
Turn Type	Perm	NA	Free	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		Free	8		8	2		2	6		6
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	20.0	20.0		20.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0
Total Split (s)	25.0	25.0		25.0	25.0	25.0	18.0	55.0	55.0	10.0	47.0	47.0
Total Split (%)	27.8%	27.8%		27.8%	27.8%	27.8%	20.0%	61.1%	61.1%	11.1%	52.2%	52.2%
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	14.7	14.7	84.8	14.7	14.7	14.7	60.1	55.3	55.3	47.1	41.1	41.1
Actuated g/C Ratio	0.17	0.17	1.00	0.17	0.17	0.17	0.71	0.65	0.65	0.56	0.48	0.48
v/c Ratio	0.25	0.43	0.16	0.03	0.66	0.19	0.99	0.90	0.02	0.17	0.72	0.15
Control Delay	34.7	35.2	0.2	28.2	43.1	1.0	54.3	27.9	0.0	7.9	24.0	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.7	35.2	0.2	28.2	43.1	1.0	54.3	27.9	0.0	7.9	24.0	2.4
LOS	C	D	A	C	D	A	D	C	A	A	C	A
Approach Delay		14.3			32.0			35.5			20.0	
Approach LOS		B			C			D			C	

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 84.8	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.99	
Intersection Signal Delay: 28.3	Intersection LOS: C
Intersection Capacity Utilization 88.2%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 14: US 24 & Stapleton Dr

Intersection	
Int Delay, s/veh	7.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	121	216	16	32	1	81	128	22	2	193	52
Future Vol, veh/h	35	121	216	16	32	1	81	128	22	2	193	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	155	300	-	155	315	-	155	205	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	127	227	17	34	1	85	135	23	2	203	55

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	541	535	203	717	567	135	258	0	0	158	0	0
Stage 1	207	207	-	305	305	-	-	-	-	-	-	-
Stage 2	334	328	-	412	262	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	452	452	838	345	433	914	1307	-	-	1422	-	-
Stage 1	795	731	-	705	662	-	-	-	-	-	-	-
Stage 2	680	647	-	617	691	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	401	422	838	184	404	914	1307	-	-	1422	-	-
Mov Cap-2 Maneuver	401	422	-	184	404	-	-	-	-	-	-	-
Stage 1	743	730	-	659	619	-	-	-	-	-	-	-
Stage 2	600	605	-	371	690	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	13.3	18.4	2.8	0.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1307	-	-	401	422	838	184	404	914	1422	-	-
HCM Lane V/C Ratio	0.065	-	-	0.092	0.302	0.271	0.092	0.083	0.001	0.001	-	-
HCM Control Delay (s)	7.9	-	-	14.9	17.2	10.9	26.5	14.7	8.9	7.5	-	-
HCM Lane LOS	A	-	-	B	C	B	D	B	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.3	1.3	1.1	0.3	0.3	0	0	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	40	105	28	843	1117	21
Future Volume (vph)	40	105	28	843	1117	21
Turn Type	Prot	Free	Prot	NA	NA	Perm
Protected Phases	6		7	4	8	
Permitted Phases		Free				8
Detector Phase	6		7	4	8	8
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	20.0		10.0	20.0	20.0	20.0
Total Split (s)	25.0		48.0	95.0	47.0	47.0
Total Split (%)	20.8%		40.0%	79.2%	39.2%	39.2%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	Max		None	C-Max	C-Max	C-Max
Act Effct Green (s)	20.0	120.0	6.5	90.0	82.8	82.8
Actuated g/C Ratio	0.17	1.00	0.05	0.75	0.69	0.69
v/c Ratio	0.14	0.07	0.16	0.32	0.48	0.02
Control Delay	44.2	0.1	55.6	5.3	10.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	44.2	0.1	55.6	5.3	10.2	3.7
LOS	D	A	E	A	B	A
Approach Delay	12.2			7.0	10.0	
Approach LOS	B			A	B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 15 (13%), Referenced to phase 4:NBT and 8:SBT, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.48	
Intersection Signal Delay: 9.0	Intersection LOS: A
Intersection Capacity Utilization 43.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 9: US 24 & Rex Rd

Intersection	
Int Delay, s/veh	5.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	35	275	158	192	463	51
Future Vol, veh/h	35	275	158	192	463	51
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	0	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	37	289	166	202	487	54

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1021	487	541	0	-	0
Stage 1	487	-	-	-	-	-
Stage 2	534	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	262	581	1028	-	-	-
Stage 1	618	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	220	581	1028	-	-	-
Mov Cap-2 Maneuver	311	-	-	-	-	-
Stage 1	519	-	-	-	-	-
Stage 2	588	-	-	-	-	-

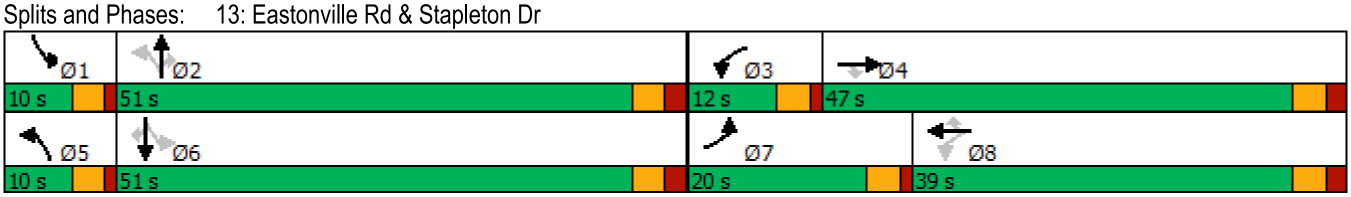
Approach	EB	NB	SB
HCM Control Delay, s	17.3	4.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1028	-	311	581	-	-
HCM Lane V/C Ratio	0.162	-	0.118	0.498	-	-
HCM Control Delay (s)	9.2	-	18.1	17.2	-	-
HCM Lane LOS	A	-	C	C	-	-
HCM 95th %tile Q(veh)	0.6	-	0.4	2.8	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	128	990	224	143	832	85	108	137	177	237	277	189
Future Volume (vph)	128	990	224	143	832	85	108	137	177	237	277	189
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	20.0	47.0	47.0	12.0	39.0	39.0	10.0	51.0	51.0	10.0	51.0	51.0
Total Split (%)	16.7%	39.2%	39.2%	10.0%	32.5%	32.5%	8.3%	42.5%	42.5%	8.3%	42.5%	42.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	9.0	33.2	33.2	41.6	32.4	32.4	27.2	20.0	20.0	27.2	20.0	20.0
Actuated g/C Ratio	0.10	0.39	0.39	0.48	0.38	0.38	0.32	0.23	0.23	0.32	0.23	0.23
v/c Ratio	0.38	0.76	0.32	0.58	0.66	0.13	0.39	0.33	0.36	0.59	0.67	0.38
Control Delay	41.8	27.5	5.7	22.8	25.7	2.0	24.5	30.6	6.7	29.7	39.2	6.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.8	27.5	5.7	22.8	25.7	2.0	24.5	30.6	6.7	29.7	39.2	6.6
LOS	D	C	A	C	C	A	C	C	A	C	D	A
Approach Delay		25.2			23.4			19.0			27.2	
Approach LOS		C			C			B			C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 86	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 24.3	Intersection LOS: C
Intersection Capacity Utilization 70.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 13: Eastonville Rd & Stapleton Dr

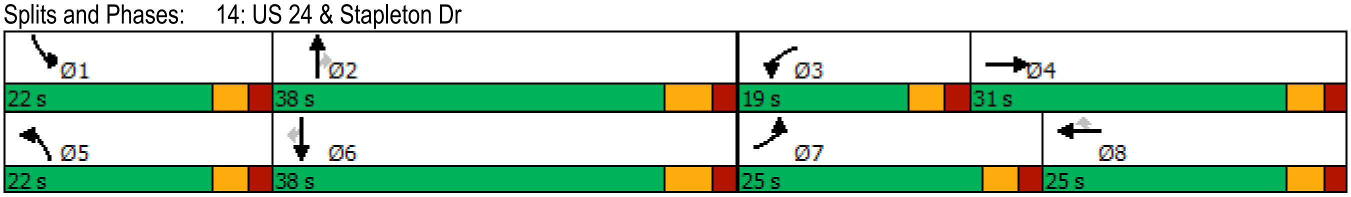


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	428	488	608	200	485	124	332	321	175	222	742	263
Future Volume (vph)	428	488	608	200	485	124	332	321	175	222	742	263
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8			2			6
Detector Phase	7	4		3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0		10.0	10.0	10.0	10.0	11.0	11.0	10.0	11.0	11.0
Total Split (s)	25.0	31.0		19.0	25.0	25.0	22.0	38.0	38.0	22.0	38.0	38.0
Total Split (%)	22.7%	28.2%		17.3%	22.7%	22.7%	20.0%	34.5%	34.5%	20.0%	34.5%	34.5%
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	17.8	24.9	104.7	11.5	18.7	18.7	15.0	34.7	34.7	12.5	32.2	32.2
Actuated g/C Ratio	0.17	0.24	1.00	0.11	0.18	0.18	0.14	0.33	0.33	0.12	0.31	0.31
v/c Ratio	0.77	0.61	0.40	0.56	0.81	0.31	0.71	0.29	0.28	0.57	0.70	0.41
Control Delay	51.8	39.5	0.8	50.9	53.0	3.9	51.9	27.9	5.5	50.0	37.0	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.8	39.5	0.8	50.9	53.0	3.9	51.9	27.9	5.5	50.0	37.0	5.6
LOS	D	D	A	D	D	A	D	C	A	D	D	A
Approach Delay		27.5			44.9			32.8			32.5	
Approach LOS		C			D			C			C	

Intersection Summary

Cycle Length: 110
Actuated Cycle Length: 104.7
Natural Cycle: 65
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.81
Intersection Signal Delay: 33.1 — Intersection LOS: C
Intersection Capacity Utilization 73.1% — ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 14: US 24 & Stapleton Dr



Intersection	
Int Delay, s/veh	8.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	102	91	18	87	1	158	138	14	2	200	67
Future Vol, veh/h	41	102	91	18	87	1	158	138	14	2	200	67
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	155	300	-	155	315	-	155	205	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	107	96	19	92	1	166	145	15	2	211	71

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	746	707	211	829	763	145	282	0	0	160	0	0
Stage 1	215	215	-	477	477	-	-	-	-	-	-	-
Stage 2	531	492	-	352	286	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	330	360	829	290	334	902	1280	-	-	1419	-	-
Stage 1	787	725	-	569	556	-	-	-	-	-	-	-
Stage 2	532	548	-	665	675	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	225	313	829	171	290	902	1280	-	-	1419	-	-
Mov Cap-2 Maneuver	225	313	-	171	290	-	-	-	-	-	-	-
Stage 1	685	724	-	495	484	-	-	-	-	-	-	-
Stage 2	375	477	-	500	674	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	18	23.8	4.2	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1280	-	-	225	313	829	171	290	902	1419	-	-
HCM Lane V/C Ratio	0.13	-	-	0.192	0.343	0.116	0.111	0.316	0.001	0.001	-	-
HCM Control Delay (s)	8.2	-	-	24.8	22.4	9.9	28.7	23	9	7.5	-	-
HCM Lane LOS	A	-	-	C	C	A	D	C	A	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	0.7	1.5	0.4	0.4	1.3	0	0	-	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	29	89	75	1107	1021	31
Future Volume (vph)	29	89	75	1107	1021	31
Turn Type	Prot	Free	Prot	NA	NA	Perm
Protected Phases	6		7	4	8	
Permitted Phases		Free				8
Detector Phase	6		7	4	8	8
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	20.0		10.0	20.0	20.0	20.0
Total Split (s)	25.0		15.0	95.0	80.0	80.0
Total Split (%)	20.8%		12.5%	79.2%	66.7%	66.7%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	Max		None	C-Max	C-Max	C-Max
Act Effct Green (s)	20.0	120.0	8.1	90.0	79.1	79.1
Actuated g/C Ratio	0.17	1.00	0.07	0.75	0.66	0.66
v/c Ratio	0.11	0.06	0.34	0.43	0.46	0.03
Control Delay	43.6	0.1	57.1	6.1	11.4	2.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.6	0.1	57.1	6.1	11.4	2.9
LOS	D	A	E	A	B	A
Approach Delay	10.9			9.4	11.1	
Approach LOS	B			A	B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 15 (13%), Referenced to phase 4:NBT and 8:SBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.46	
Intersection Signal Delay: 10.3	Intersection LOS: B
Intersection Capacity Utilization 44.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 9: US 24 & Rex Rd

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	44	177	307	389	292	35
Future Vol, veh/h	44	177	307	389	292	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	0	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	46	186	323	409	307	37

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1381	326	344	0	-	0
Stage 1	326	-	-	-	-	-
Stage 2	1055	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	159	715	1215	-	-	-
Stage 1	731	-	-	-	-	-
Stage 2	335	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	117	715	1215	-	-	-
Mov Cap-2 Maneuver	~ -21	-	-	-	-	-
Stage 1	537	-	-	-	-	-
Stage 2	335	-	-	-	-	-

Approach	EB		NB		SB	
HCM Control Delay, s			4		0	
HCM LOS	-					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1215	-	+	715	-	-
HCM Lane V/C Ratio	0.266	-	-	0.261	-	-
HCM Control Delay (s)	9	-	-	11.8	-	-
HCM Lane LOS	A	-	-	B	-	-
HCM 95th %tile Q(veh)	1.1	-	-	1	-	-

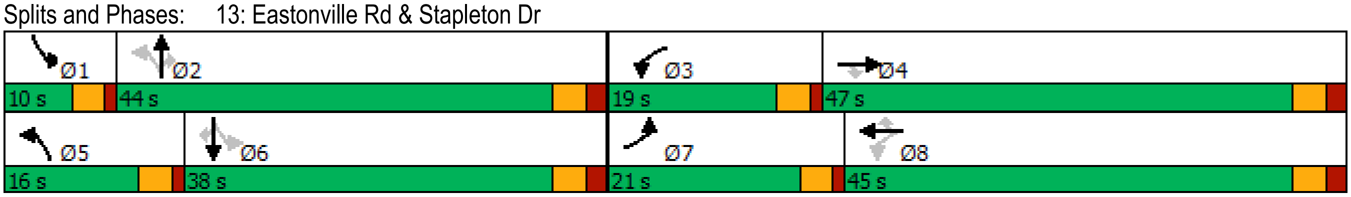
Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	248	904	160	173	1249	151	251	297	158	131	196	132
Future Volume (vph)	248	904	160	173	1249	151	251	297	158	131	196	132
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	21.0	47.0	47.0	19.0	45.0	45.0	16.0	44.0	44.0	10.0	38.0	38.0
Total Split (%)	17.5%	39.2%	39.2%	15.8%	37.5%	37.5%	13.3%	36.7%	36.7%	8.3%	31.7%	31.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	12.8	42.6	42.6	51.8	40.3	40.3	34.3	23.2	23.2	24.3	17.3	17.3
Actuated g/C Ratio	0.13	0.42	0.42	0.52	0.40	0.40	0.34	0.23	0.23	0.24	0.17	0.17
v/c Ratio	0.60	0.62	0.22	0.54	0.90	0.22	0.75	0.73	0.34	0.57	0.64	0.36
Control Delay	48.2	26.2	4.9	17.5	39.4	7.5	41.0	46.3	6.8	36.1	48.5	8.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.2	26.2	4.9	17.5	39.4	7.5	41.0	46.3	6.8	36.1	48.5	8.8
LOS	D	C	A	B	D	A	D	D	A	D	D	A
Approach Delay		27.8			33.8			35.6			33.5	
Approach LOS		C			C			D			C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 100.5	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 32.1	Intersection LOS: C
Intersection Capacity Utilization 80.8%	ICU Level of Service D
Analysis Period (min) 15	

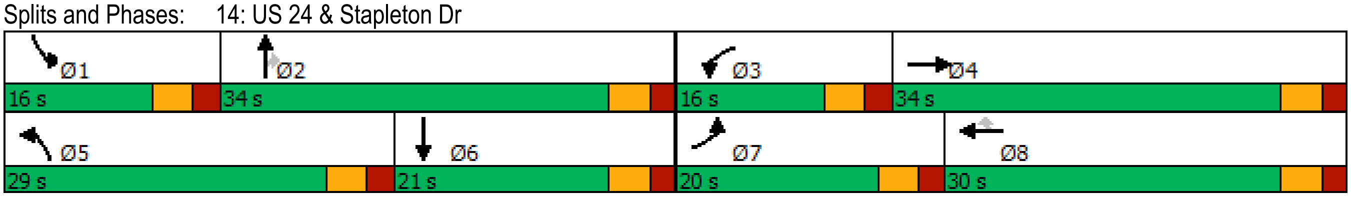
Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	372	553	388	200	778	122	723	693	175	223	444	449
Future Volume (vph)	372	553	388	200	778	122	723	693	175	223	444	449
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8			2			Free
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	10.0	10.0		10.0	10.0	10.0	10.0	11.0	11.0	10.0	11.0	
Total Split (s)	20.0	34.0		16.0	30.0	30.0	29.0	34.0	34.0	16.0	21.0	
Total Split (%)	20.0%	34.0%		16.0%	30.0%	30.0%	29.0%	34.0%	34.0%	16.0%	21.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	
Act Effct Green (s)	14.4	28.8	98.6	10.2	24.7	24.7	23.3	29.1	29.1	10.4	16.2	98.6
Actuated g/C Ratio	0.15	0.29	1.00	0.10	0.25	0.25	0.24	0.30	0.30	0.11	0.16	1.00
v/c Ratio	0.78	0.56	0.26	0.59	0.93	0.24	0.91	0.68	0.31	0.65	0.78	0.30
Control Delay	52.9	32.3	0.4	49.8	53.9	2.4	53.4	34.8	5.7	51.4	50.4	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	32.3	0.4	49.8	53.9	2.4	53.4	34.8	5.7	51.4	50.4	0.5
LOS	D	C	A	D	D	A	D	C	A	D	D	A
Approach Delay		28.7			47.4			40.0			30.3	
Approach LOS		C			D			D			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 98.6	
Natural Cycle: 75	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 36.6	Intersection LOS: D
Intersection Capacity Utilization 81.7%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 14: US 24 & Stapleton Dr



Intersection	
Int Delay, s/veh	721

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	146	218	623	75	23	86	130	310	15	194	52
Future Vol, veh/h	35	146	218	623	75	23	86	130	310	15	194	52
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	155	300	-	155	315	-	155	205	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	154	229	656	79	24	91	137	326	16	204	55

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	770	881	204	774	610	137	259	0	0	463	0	0
Stage 1	236	236	-	319	319	-	-	-	-	-	-	-
Stage 2	534	645	-	455	291	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	318	285	837	~ 316	409	911	1306	-	-	1098	-	-
Stage 1	767	710	-	693	653	-	-	-	-	-	-	-
Stage 2	530	467	-	~ 585	672	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	244	261	837	~ 115	375	911	1306	-	-	1098	-	-
Mov Cap-2 Maneuver	244	261	-	~ 115	375	-	-	-	-	-	-	-
Stage 1	713	699	-	~ 644	607	-	-	-	-	-	-	-
Stage 2	418	434	-	~ 326	662	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	21.4	$ 1894.1	1.3	0.5
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1306	-	-	244	261	837	115	375	911	1098	-	-
HCM Lane V/C Ratio	0.069	-	-	0.151	0.589	0.274	5.703	0.211	0.027	0.014	-	-
HCM Control Delay (s)	8	-	-	22.4	36.8	10.9	$ 2189.7	17.1	9.1	8.3	-	-
HCM Lane LOS	A	-	-	C	E	B	F	C	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.5	3.4	1.1	71.1	0.8	0.1	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	15.8
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	420	759	554	275
Demand Flow Rate, veh/h	429	774	566	280
Vehicles Circulating, veh/h	893	271	211	843
Vehicles Exiting, veh/h	230	506	1111	202
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	29.5	16.4	5.4	14.3
Approach LOS	D	C	A	B

Lane	Left	Left	Left	Right	Left
Designated Moves	LTR	LTR	LT	R	LTR
Assumed Moves	LTR	LTR	LT	R	LTR
RT Channelized					
Lane Util	1.000	1.000	0.412	0.588	1.000
Follow-Up Headway, s	2.609	2.609	2.535	2.535	2.609
Critical Headway, s	4.976	4.976	4.544	4.544	4.976
Entry Flow, veh/h	429	774	233	333	280
Cap Entry Lane, veh/h	555	1047	1172	1172	584
Entry HV Adj Factor	0.979	0.981	0.980	0.979	0.982
Flow Entry, veh/h	420	759	228	326	275
Cap Entry, veh/h	543	1027	1148	1147	573
V/C Ratio	0.773	0.740	0.199	0.284	0.479
Control Delay, s/veh	29.5	16.4	4.9	5.8	14.3
LOS	D	C	A	A	B
95th %tile Queue, veh	7	7	1	1	3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	146	218	623	75	23	86	130	310	15	194	52
Future Volume (vph)	35	146	218	623	75	23	86	130	310	15	194	52
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	15.0	30.0	30.0	15.0	30.0	30.0	75.0	75.0	75.0	75.0	75.0	75.0
Total Split (%)	12.5%	25.0%	25.0%	12.5%	25.0%	25.0%	62.5%	62.5%	62.5%	62.5%	62.5%	62.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	15.4	9.2	9.2	23.8	20.2	20.2	10.8	10.8	10.8	10.8	10.8	10.8
Actuated g/C Ratio	0.34	0.20	0.20	0.53	0.45	0.45	0.24	0.24	0.24	0.24	0.24	0.24
v/c Ratio	0.07	0.41	0.45	1.00	0.10	0.03	0.33	0.31	0.52	0.05	0.46	0.13
Control Delay	6.7	19.8	6.3	49.6	11.4	1.2	18.1	16.5	5.7	14.1	18.8	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	6.7	19.8	6.3	49.6	11.4	1.2	18.1	16.5	5.7	14.1	18.8	5.1
LOS	A	B	A	D	B	A	B	B	A	B	B	A
Approach Delay		11.3			44.1			10.4			15.8	
Approach LOS		B			D			B			B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 45.3	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 24.1	Intersection LOS: C
Intersection Capacity Utilization 73.8%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 1: Eastonville Rd & Rex Rd

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	461	10	13	703	18	27
Future Vol, veh/h	461	10	13	703	18	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	205	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	485	11	14	740	19	28

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	496	0	1259	491
Stage 1	-	-	-	-	491	-
Stage 2	-	-	-	-	768	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1068	-	188	578
Stage 1	-	-	-	-	615	-
Stage 2	-	-	-	-	458	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1068	-	186	578
Mov Cap-2 Maneuver	-	-	-	-	316	-
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	458	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	13.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	316	578	-	-	1068	-
HCM Lane V/C Ratio	0.06	0.049	-	-	0.013	-
HCM Control Delay (s)	17.1	11.6	-	-	8.4	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0	-

Intersection				
Intersection Delay, s/veh	7.8			
Intersection LOS	A			

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	496	754	47
Demand Flow Rate, veh/h	506	769	48
Vehicles Circulating, veh/h	14	19	495
Vehicles Exiting, veh/h	774	524	25
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.1	9.1	5.0
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	506	769	48
Cap Entry Lane, veh/h	1360	1353	833
Entry HV Adj Factor	0.981	0.981	0.979
Flow Entry, veh/h	496	754	47
Cap Entry, veh/h	1334	1327	816
V/C Ratio	0.372	0.568	0.058
Control Delay, s/veh	6.1	9.1	5.0
LOS	A	A	A
95th %tile Queue, veh	2	4	0

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	476	12	19	679	36	57
Future Vol, veh/h	476	12	19	679	36	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	205	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	517	13	21	738	39	62

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	530	0	1304	524
Stage 1	-	-	-	-	524	-
Stage 2	-	-	-	-	780	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1037	-	177	553
Stage 1	-	-	-	-	594	-
Stage 2	-	-	-	-	452	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1037	-	173	553
Mov Cap-2 Maneuver	-	-	-	-	302	-
Stage 1	-	-	-	-	582	-
Stage 2	-	-	-	-	452	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	14.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	302	553	-	-	1037	-
HCM Lane V/C Ratio	0.13	0.112	-	-	0.02	-
HCM Control Delay (s)	18.7	12.3	-	-	8.5	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	0.4	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	8.1
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	530	759	101
Demand Flow Rate, veh/h	540	774	103
Vehicles Circulating, veh/h	21	40	527
Vehicles Exiting, veh/h	793	590	34
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.5	9.5	5.9
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	540	774	103
Cap Entry Lane, veh/h	1351	1325	806
Entry HV Adj Factor	0.981	0.981	0.981
Flow Entry, veh/h	530	759	101
Cap Entry, veh/h	1325	1299	790
V/C Ratio	0.400	0.584	0.128
Control Delay, s/veh	6.5	9.5	5.9
LOS	A	A	A
95th %tile Queue, veh	2	4	0

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	509	24	38	625	73	114
Future Vol, veh/h	509	24	38	625	73	114
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	305	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	536	25	40	658	77	120

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	561	0	1274	536
Stage 1	-	-	-	-	536	-
Stage 2	-	-	-	-	738	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1010	-	184	545
Stage 1	-	-	-	-	587	-
Stage 2	-	-	-	-	473	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1010	-	177	545
Mov Cap-2 Maneuver	-	-	-	-	302	-
Stage 1	-	-	-	-	564	-
Stage 2	-	-	-	-	473	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	16.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	302	545	-	-	1010	-
HCM Lane V/C Ratio	0.254	0.22	-	-	0.04	-
HCM Control Delay (s)	20.9	13.5	-	-	8.7	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	1	0.8	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	8.2
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	561	698	197
Demand Flow Rate, veh/h	573	712	201
Vehicles Circulating, veh/h	41	79	547
Vehicles Exiting, veh/h	750	669	66
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.0	9.3	7.5
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	573	712	201
Cap Entry Lane, veh/h	1323	1273	790
Entry HV Adj Factor	0.980	0.980	0.980
Flow Entry, veh/h	561	698	197
Cap Entry, veh/h	1296	1248	774
V/C Ratio	0.433	0.559	0.254
Control Delay, s/veh	7.0	9.3	7.5
LOS	A	A	A
95th %tile Queue, veh	2	4	1

Intersection	
Int Delay, s/veh	4.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	577	46	45	526	137	135
Future Vol, veh/h	577	46	45	526	137	135
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	305	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	607	48	47	554	144	142

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	655	0	1255	607
Stage 1	-	-	-	-	607	-
Stage 2	-	-	-	-	648	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	932	-	189	496
Stage 1	-	-	-	-	544	-
Stage 2	-	-	-	-	521	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	932	-	180	496
Mov Cap-2 Maneuver	-	-	-	-	308	-
Stage 1	-	-	-	-	517	-
Stage 2	-	-	-	-	521	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	20.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	308	496	-	-	932	-
HCM Lane V/C Ratio	0.468	0.287	-	-	0.051	-
HCM Control Delay (s)	26.6	15.1	-	-	9.1	-
HCM Lane LOS	D	C	-	-	A	-
HCM 95th %tile Q(veh)	2.4	1.2	-	-	0.2	-

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	655	601	286
Demand Flow Rate, veh/h	668	613	292
Vehicles Circulating, veh/h	48	147	619
Vehicles Exiting, veh/h	712	764	97
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	8.2	8.9	10.3
Approach LOS	A	A	B

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	668	613	292
Cap Entry Lane, veh/h	1314	1188	734
Entry HV Adj Factor	0.980	0.980	0.979
Flow Entry, veh/h	655	601	286
Cap Entry, veh/h	1288	1164	719
V/C Ratio	0.508	0.516	0.398
Control Delay, s/veh	8.2	8.9	10.3
LOS	A	A	B
95th %tile Queue, veh	3	3	2

Intersection	
Int Delay, s/veh	91

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	120	592	289	163	410	283
Future Vol, veh/h	120	592	289	163	410	283
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	405	-	-	155	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	126	623	304	172	432	298

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	476	0	-	0	1179	304
Stage 1	-	-	-	-	304	-
Stage 2	-	-	-	-	875	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1086	-	-	-	~ 211	736
Stage 1	-	-	-	-	748	-
Stage 2	-	-	-	-	~ 408	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1086	-	-	-	~ 187	736
Mov Cap-2 Maneuver	-	-	-	-	~ 243	-
Stage 1	-	-	-	-	661	-
Stage 2	-	-	-	-	~ 408	-

Approach	EB		WB		SB	
HCM Control Delay, s	1.5		0		242.2	
HCM LOS					F	

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1086	-	-	-	243	736
HCM Lane V/C Ratio	0.116	-	-	-	1.776	0.405
HCM Control Delay (s)	8.8	-	-	-	$ 400.2	13.2
HCM Lane LOS	A	-	-	-	F	B
HCM 95th %tile Q(veh)	0.4	-	-	-	29.1	2

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	18.6
Intersection LOS	C

Approach	EB	WB	SB
Entry Lanes	1	2	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	749	476	730
Demand Flow Rate, veh/h	764	485	745
Vehicles Circulating, veh/h	441	129	310
Vehicles Exiting, veh/h	614	1076	304
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	29.0	4.7	17.0
Approach LOS	D	A	C

Lane	Left	Left	Right	Left
Designated Moves	LT	LT	R	LR
Assumed Moves	LT	LT	R	LR
RT Channelized				
Lane Util	1.000	0.639	0.361	1.000
Follow-Up Headway, s	2.609	2.535	2.535	2.609
Critical Headway, s	4.976	4.544	4.544	4.976
Entry Flow, veh/h	764	310	175	745
Cap Entry Lane, veh/h	880	1263	1263	1006
Entry HV Adj Factor	0.980	0.980	0.983	0.980
Flow Entry, veh/h	749	304	172	730
Cap Entry, veh/h	862	1238	1241	986
V/C Ratio	0.868	0.245	0.139	0.741
Control Delay, s/veh	29.0	5.1	4.1	17.0
LOS	D	A	A	C
95th %tile Queue, veh	11	1	0	7

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	120	592	289	163	410	283
Future Volume (vph)	120	592	289	163	410	283
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	15.0	78.0	63.0	63.0	42.0	42.0
Total Split (%)	12.5%	65.0%	52.5%	52.5%	35.0%	35.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	None	None	Max	Max
Act Effct Green (s)	73.0	73.0	59.2	59.2	37.0	37.0
Actuated g/C Ratio	0.61	0.61	0.49	0.49	0.31	0.31
v/c Ratio	0.21	0.55	0.33	0.20	0.79	0.43
Control Delay	10.9	16.1	47.7	26.7	50.1	5.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.9	16.1	47.7	26.7	50.1	5.5
LOS	B	B	D	C	D	A
Approach Delay		15.3	40.1		31.9	
Approach LOS		B	D		C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 27.5	Intersection LOS: C
Intersection Capacity Utilization 62.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 6: Rex Rd & Residential Collector

Intersection	
Int Delay, s/veh	10.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	968	34	79	351	100	236
Future Vol, veh/h	968	34	79	351	100	236
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	405	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1019	36	83	369	105	248

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1055	0	1554	1019
Stage 1	-	-	-	-	1019	-
Stage 2	-	-	-	-	535	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	660	-	125	288
Stage 1	-	-	-	-	348	-
Stage 2	-	-	-	-	587	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	660	-	109	288
Mov Cap-2 Maneuver	-	-	-	-	219	-
Stage 1	-	-	-	-	304	-
Stage 2	-	-	-	-	587	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.1	54.8
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	219	288	-	-	660	-
HCM Lane V/C Ratio	0.481	0.863	-	-	0.126	-
HCM Control Delay (s)	35.8	62.8	-	-	11.2	-
HCM Lane LOS	E	F	-	-	B	-
HCM 95th %tile Q(veh)	2.4	7.5	-	-	0.4	-

Intersection	
Intersection Delay, s/veh	15.1
Intersection LOS	C

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	1055	452	353
Demand Flow Rate, veh/h	1076	461	360
Vehicles Circulating, veh/h	85	107	1039
Vehicles Exiting, veh/h	483	1292	122
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	17.7	6.2	18.7
Approach LOS	C	A	C

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	1076	461	360
Cap Entry Lane, veh/h	1321	1297	587
Entry HV Adj Factor	0.980	0.980	0.981
Flow Entry, veh/h	1055	452	353
Cap Entry, veh/h	1295	1270	576
V/C Ratio	0.814	0.356	0.613
Control Delay, s/veh	17.7	6.2	18.7
LOS	C	A	C
95th %tile Queue, veh	10	2	4

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	19	1166	19	39	420	41	5	0	30	31	0	5
Future Vol, veh/h	19	1166	19	39	420	41	5	0	30	31	0	5
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	155	200	-	0	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	20	1227	20	41	442	43	5	0	32	33	0	5

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	485	0	0	1247	0	0	1815	1834	1227	1817	1811	442
Stage 1	-	-	-	-	-	-	1267	1267	-	524	524	-
Stage 2	-	-	-	-	-	-	548	567	-	1293	1287	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1078	-	-	558	-	-	60	76	217	60	79	615
Stage 1	-	-	-	-	-	-	207	240	-	537	530	-
Stage 2	-	-	-	-	-	-	521	507	-	200	235	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1078	-	-	558	-	-	55	69	217	48	72	615
Mov Cap-2 Maneuver	-	-	-	-	-	-	55	69	-	48	72	-
Stage 1	-	-	-	-	-	-	203	235	-	527	491	-
Stage 2	-	-	-	-	-	-	479	470	-	168	231	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.9	32	152.8
HCM LOS			D	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	55	217	1078	-	-	558	-	-	48	615
HCM Lane V/C Ratio	0.096	0.146	0.019	-	-	0.074	-	-	0.68	0.009
HCM Control Delay (s)	77.3	24.4	8.4	-	-	12	-	-	175.7	10.9
HCM Lane LOS	F	C	A	-	-	B	-	-	F	B
HCM 95th %tile Q(veh)	0.3	0.5	0.1	-	-	0.2	-	-	2.7	0

Intersection								
Intersection Delay, s/veh	7.2							
Intersection LOS	A							

Approach		EB		WB		NB		SB
Entry Lanes		2		2		1		1
Conflicting Circle Lanes		2		2		2		2
Adj Approach Flow, veh/h		1309		545		38		39
Demand Flow Rate, veh/h		1334		556		39		40
Vehicles Circulating, veh/h		78		26		1348		514
Vehicles Exiting, veh/h		476		1361		64		68
Ped Vol Crossing Leg, #/h		0		0		0		0
Ped Cap Adj		1.000		1.000		1.000		1.000
Approach Delay, s/veh		8.4		4.4		9.4		4.4
Approach LOS		A		A		A		A

Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	TR	LT	TR	LTR	LTR
Assumed Moves	LT	TR	LT	TR	LTR	LTR
RT Channelized						
Lane Util	0.470	0.530	0.469	0.531	1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328
Entry Flow, veh/h	627	707	261	295	39	40
Cap Entry Lane, veh/h	1256	1329	1318	1389	451	917
Entry HV Adj Factor	0.981	0.981	0.981	0.979	0.974	0.975
Flow Entry, veh/h	615	694	256	289	38	39
Cap Entry, veh/h	1232	1304	1293	1360	440	894
V/C Ratio	0.499	0.532	0.198	0.212	0.086	0.044
Control Delay, s/veh	8.3	8.5	4.5	4.4	9.4	4.4
LOS	A	A	A	A	A	A
95th %tile Queue, veh	3	3	1	1	0	0

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	19	1166	19	39	420	41	5	0	31	0
Future Volume (vph)	19	1166	19	39	420	41	5	0	31	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2			6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	2	2	2	6	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	95.0	95.0	95.0	95.0	95.0	95.0	25.0	25.0	25.0	25.0
Total Split (%)	79.2%	79.2%	79.2%	79.2%	79.2%	79.2%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	61.5	61.5	61.5	61.5	61.5	61.5	48.5	48.5	48.5	48.5
Actuated g/C Ratio	0.51	0.51	0.51	0.51	0.51	0.51	0.40	0.40	0.40	0.40
v/c Ratio	0.04	0.68	0.02	0.34	0.24	0.05	0.01	0.04	0.06	0.01
Control Delay	8.2	17.5	1.6	53.6	40.2	25.3	27.8	0.1	27.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	8.2	17.5	1.6	53.6	40.2	25.3	27.8	0.1	27.2	0.0
LOS	A	B	A	D	D	C	C	A	C	A
Approach Delay		17.1			40.0			3.9		23.6
Approach LOS		B			D			A		C

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 0 (0%), Referenced to phase 4:SBTL and 8:NBTL, Start of Green
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 23.4 — Intersection LOS: C
Intersection Capacity Utilization 49.1% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 8: C-1/C-2 & Rex Rd

9: US 24 & Rex Rd

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	133	1095	418	833	1096	81
Future Volume (vph)	133	1095	418	833	1096	81
Turn Type	Prot	Free	Prot	NA	NA	Perm
Protected Phases	6		7	4	8	
Permitted Phases		Free				8
Detector Phase	6		7	4	8	8
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	20.0		10.0	20.0	20.0	20.0
Total Split (s)	25.0		48.0	95.0	47.0	47.0
Total Split (%)	20.8%		40.0%	79.2%	39.2%	39.2%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	Max		None	C-Max	C-Max	C-Max
Act Effct Green (s)	20.0	120.0	20.9	90.0	64.1	64.1
Actuated g/C Ratio	0.17	1.00	0.17	0.75	0.53	0.53
v/c Ratio	0.47	0.73	0.74	0.32	0.61	0.10
Control Delay	51.3	3.0	54.3	5.3	21.7	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	3.0	54.3	5.3	21.7	5.1
LOS	D	A	D	A	C	A
Approach Delay	8.2			22.0	20.6	
Approach LOS	A			C	C	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 120
Offset: 15 (13%), Referenced to phase 4:NBT and 8:SBT, Start of Green
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 16.9 Intersection LOS: B
Intersection Capacity Utilization 62.1% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 9: US 24 & Rex Rd

Intersection	
Int Delay, s/veh	3.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	108	59	468	36	20	1016
Future Vol, veh/h	108	59	468	36	20	1016
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	114	62	493	38	21	1069

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1604	493	0	0	531	0
Stage 1	493	-	-	-	-	-
Stage 2	1111	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	116	576	-	-	1036	-
Stage 1	614	-	-	-	-	-
Stage 2	315	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	114	576	-	-	1036	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	602	-	-	-	-	-
Stage 2	315	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	35.8	0	0.2
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	286	1036	-
HCM Lane V/C Ratio	-	-	0.615	0.02	-
HCM Control Delay (s)	-	-	35.8	8.5	-
HCM Lane LOS	-	-	E	A	-
HCM 95th %tile Q(veh)	-	-	3.8	0.1	-

Intersection	
Intersection Delay, s/veh	15.6
Intersection LOS	C

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	176	531	1090
Demand Flow Rate, veh/h	179	542	1111
Vehicles Circulating, veh/h	503	21	116
Vehicles Exiting, veh/h	60	1206	566
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	5.9	6.2	21.7
Approach LOS	A	A	C

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	179	542	1111
Cap Entry Lane, veh/h	926	1395	1287
Entry HV Adj Factor	0.983	0.980	0.981
Flow Entry, veh/h	176	531	1090
Cap Entry, veh/h	910	1367	1262
V/C Ratio	0.193	0.389	0.863
Control Delay, s/veh	5.9	6.2	21.7
LOS	A	A	C
95th %tile Queue, veh	1	2	12

Intersection	
Int Delay, s/veh	1.6

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	55	29	475	18	10	1114
Future Vol, veh/h	55	29	475	18	10	1114
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	65	34	559	21	12	1311

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1894	559	0	0	580	0
Stage 1	559	-	-	-	-	-
Stage 2	1335	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	77	529	-	-	994	-
Stage 1	572	-	-	-	-	-
Stage 2	245	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	76	529	-	-	994	-
Mov Cap-2 Maneuver	178	-	-	-	-	-
Stage 1	565	-	-	-	-	-
Stage 2	245	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	31.8	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	231	994	-
HCM Lane V/C Ratio	-	-	0.428	0.012	-
HCM Control Delay (s)	-	-	31.8	8.7	-
HCM Lane LOS	-	-	D	A	-
HCM 95th %tile Q(veh)	-	-	2	0	-

Intersection	
Intersection Delay, s/veh	39.4
Intersection LOS	E

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	99	580	1323
Demand Flow Rate, veh/h	101	591	1349
Vehicles Circulating, veh/h	570	12	66
Vehicles Exiting, veh/h	33	1403	605
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.1	6.9	56.1
Approach LOS	A	A	F

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	101	591	1349
Cap Entry Lane, veh/h	772	1363	1290
Entry HV Adj Factor	0.980	0.981	0.981
Flow Entry, veh/h	99	580	1323
Cap Entry, veh/h	756	1337	1265
V/C Ratio	0.131	0.434	1.046
Control Delay, s/veh	6.1	6.9	56.1
LOS	A	A	F
95th %tile Queue, veh	0	2	26

Intersection	
Int Delay, s/veh	24.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	85	275	158	417	1093	168
Future Vol, veh/h	85	275	158	417	1093	168
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	0	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	89	289	166	439	1151	177

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1922	1151	1328	0	-	0
Stage 1	1151	-	-	-	-	-
Stage 2	771	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 74	~ 241	520	-	-	-
Stage 1	301	-	-	-	-	-
Stage 2	456	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 50	~ 241	520	-	-	-
Mov Cap-2 Maneuver	132	-	-	-	-	-
Stage 1	205	-	-	-	-	-
Stage 2	456	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	144.7	4.2	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	520	-	132	241	-	-
HCM Lane V/C Ratio	0.32	-	0.678	1.201	-	-
HCM Control Delay (s)	15.1	-	76.3	165.8	-	-
HCM Lane LOS	C	-	F	F	-	-
HCM 95th %tile Q(veh)	1.4	-	3.7	13.9	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection						
Intersection Delay, s/veh	9.8					
Intersection LOS	A					

Approach	EB		NB		SB	
Entry Lanes		2		2		2
Conflicting Circle Lanes		2		2		2
Adj Approach Flow, veh/h		378		605		1328
Demand Flow Rate, veh/h		386		617		1355
Vehicles Circulating, veh/h		1174		91		169
Vehicles Exiting, veh/h		350		1469		539
Ped Vol Crossing Leg, #/h		0		0		0
Ped Cap Adj		1.000		1.000		1.000
Approach Delay, s/veh		16.7		5.4		9.9
Approach LOS		C		A		A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	L	TR	LT	TR
Assumed Moves	L	TR	L	TR	LT	TR
RT Channelized						
Lane Util	0.236	0.764	0.274	0.726	0.470	0.530
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	91	295	169	448	637	718
Cap Entry Lane, veh/h	458	523	1241	1314	1155	1230
Entry HV Adj Factor	0.978	0.980	0.982	0.980	0.980	0.980
Flow Entry, veh/h	89	289	166	439	624	704
Cap Entry, veh/h	448	513	1219	1289	1132	1206
V/C Ratio	0.199	0.564	0.136	0.341	0.551	0.584
Control Delay, s/veh	11.0	18.5	4.1	5.9	9.8	10.0
LOS	B	C	A	A	A	B
95th %tile Queue, veh	1	3	0	2	3	4

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	85	275	158	417	1093	168
Future Volume (vph)	85	275	158	417	1093	168
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	20.0	20.0	10.0	20.0	20.0	20.0
Total Split (s)	20.0	20.0	13.0	100.0	87.0	87.0
Total Split (%)	16.7%	16.7%	10.8%	83.3%	72.5%	72.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	10.0	10.0	43.3	43.3	30.0	30.0
Actuated g/C Ratio	0.16	0.16	0.68	0.68	0.47	0.47
v/c Ratio	0.32	0.69	0.46	0.18	0.69	0.21
Control Delay	29.3	18.7	9.7	4.1	15.6	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.3	18.7	9.7	4.1	15.6	2.4
LOS	C	B	A	A	B	A
Approach Delay	21.2			5.6	13.8	
Approach LOS	C			A	B	

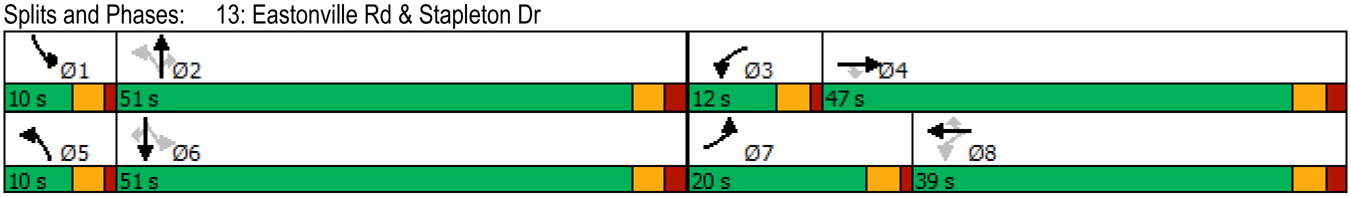
Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 63.7	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 12.9	Intersection LOS: B
Intersection Capacity Utilization 56.2%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 12: Eastonville Rd & Londonderry Dr

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	998	224	144	833	111	108	240	182	315	568	451
Future Volume (vph)	224	998	224	144	833	111	108	240	182	315	568	451
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	20.0	47.0	47.0	12.0	39.0	39.0	10.0	51.0	51.0	10.0	51.0	51.0
Total Split (%)	16.7%	39.2%	39.2%	10.0%	32.5%	32.5%	8.3%	42.5%	42.5%	8.3%	42.5%	42.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	12.9	38.4	38.4	42.8	33.6	33.6	48.2	41.1	41.1	48.2	41.1	41.1
Actuated g/C Ratio	0.12	0.34	0.34	0.38	0.30	0.30	0.43	0.37	0.37	0.43	0.37	0.37
v/c Ratio	0.60	0.87	0.35	0.78	0.82	0.21	0.64	0.37	0.27	0.74	0.88	0.62
Control Delay	54.9	43.5	7.8	50.1	45.1	5.7	36.2	28.0	4.5	35.4	48.5	14.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.9	43.5	7.8	50.1	45.1	5.7	36.2	28.0	4.5	35.4	48.5	14.6
LOS	D	D	A	D	D	A	D	C	A	D	D	B
Approach Delay		39.7			41.7			21.6			34.0	
Approach LOS		D			D			C			C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 111.9	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 36.3	Intersection LOS: D
Intersection Capacity Utilization 86.4%	ICU Level of Service E
Analysis Period (min) 15	

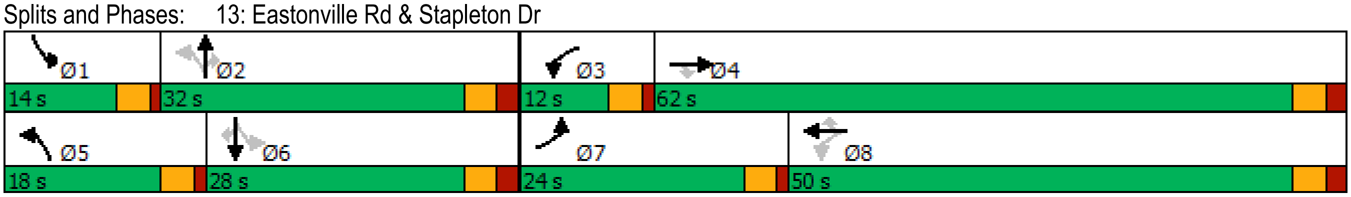
Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	224	998	224	144	833	111	108	240	182	315	568	451
Future Volume (vph)	224	998	224	144	833	111	108	240	182	315	568	451
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	24.0	62.0	62.0	12.0	50.0	50.0	18.0	32.0	32.0	14.0	28.0	28.0
Total Split (%)	20.0%	51.7%	51.7%	10.0%	41.7%	41.7%	15.0%	26.7%	26.7%	11.7%	23.3%	23.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	12.1	37.4	37.4	42.1	33.2	33.2	33.4	22.1	22.1	33.2	22.0	22.0
Actuated g/C Ratio	0.13	0.39	0.39	0.44	0.35	0.35	0.35	0.23	0.23	0.35	0.23	0.23
v/c Ratio	0.55	0.76	0.31	0.65	0.72	0.19	0.40	0.31	0.38	0.75	0.74	0.76
Control Delay	46.1	29.5	3.6	29.3	31.6	4.4	25.5	33.0	8.4	38.7	42.4	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.1	29.5	3.6	29.3	31.6	4.4	25.5	33.0	8.4	38.7	42.4	20.2
LOS	D	C	A	C	C	A	C	C	A	D	D	C
Approach Delay		28.1			28.5			23.0			34.0	
Approach LOS		C			C			C			C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 96	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 29.4	Intersection LOS: C
Intersection Capacity Utilization 74.7%	ICU Level of Service D
Analysis Period (min) 15	

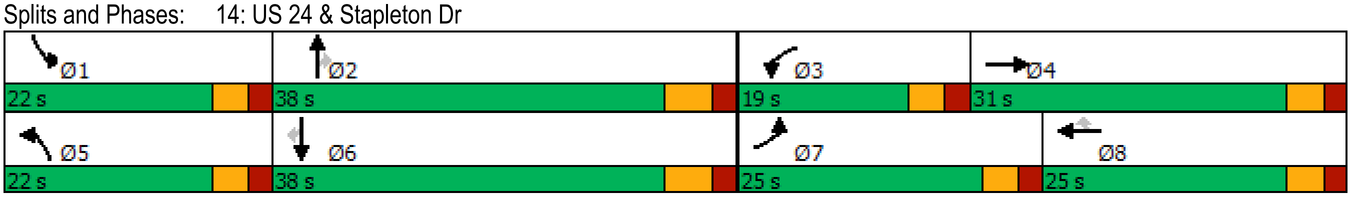
Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	442	493	680	200	487	161	356	651	175	299	1632	265
Future Volume (vph)	442	493	680	200	487	161	356	651	175	299	1632	265
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8			2			6
Detector Phase	7	4		3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0		10.0	10.0	10.0	10.0	11.0	11.0	10.0	11.0	11.0
Total Split (s)	25.0	31.0		19.0	25.0	25.0	22.0	38.0	38.0	22.0	38.0	38.0
Total Split (%)	22.7%	28.2%		17.3%	22.7%	22.7%	20.0%	34.5%	34.5%	20.0%	34.5%	34.5%
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	18.1	25.3	105.6	11.6	18.8	18.8	15.5	33.1	33.1	14.5	32.1	32.1
Actuated g/C Ratio	0.17	0.24	1.00	0.11	0.18	0.18	0.15	0.31	0.31	0.14	0.30	0.30
v/c Ratio	0.79	0.61	0.45	0.56	0.82	0.39	0.75	0.62	0.30	0.67	1.55	0.41
Control Delay	52.9	39.7	0.9	51.3	53.7	8.0	53.6	34.8	5.7	51.2	279.4	5.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	39.7	0.9	51.3	53.7	8.0	53.6	34.8	5.7	51.2	279.4	5.6
LOS	D	D	A	D	D	A	D	C	A	D	F	A
Approach Delay		27.0			44.5			36.2			213.8	
Approach LOS		C			D			D			F	

Intersection Summary	
Cycle Length: 110	
Actuated Cycle Length: 105.6	
Natural Cycle: 130	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.55	
Intersection Signal Delay: 100.6	Intersection LOS: F
Intersection Capacity Utilization 98.8%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 14: US 24 & Stapleton Dr



Intersection	
Int Delay, s/veh	22.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	41	148	96	441	119	17	161	139	645	25	202	67
Future Vol, veh/h	41	148	96	441	119	17	161	139	645	25	202	67
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	155	300	-	155	315	-	155	205	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	156	101	464	125	18	169	146	679	26	213	71

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1160	1428	213	913	820	146	284	0	0	825	0	0
Stage 1	265	265	-	484	484	-	-	-	-	-	-	-
Stage 2	895	1163	-	429	336	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	172	~ 135	827	~ 254	310	901	1278	-	-	805	-	-
Stage 1	740	689	-	564	552	-	-	-	-	-	-	-
Stage 2	335	269	-	604	642	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	93	~ 113	827	-	260	901	1278	-	-	805	-	-
Mov Cap-2 Maneuver	93	~ 113	-	-	260	-	-	-	-	-	-	-
Stage 1	642	667	-	490	479	-	-	-	-	-	-	-
Stage 2	210	233	-	~ 393	621	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	162.7		1.4	0.8
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1278	-	-	93	113	827	-	260	901	805	-	-
HCM Lane V/C Ratio	0.133	-	-	0.464	1.379	0.122	-	0.482	0.02	0.033	-	-
HCM Control Delay (s)	8.2	-	-	73.5	286.4	10	-	31.1	9.1	9.6	-	-
HCM Lane LOS	A	-	-	F	F	B	-	D	A	A	-	-
HCM 95th %tile Q(veh)	0.5	-	-	2	10.8	0.4	-	2.4	0.1	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	11.7
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	2	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	300	607	994	310
Demand Flow Rate, veh/h	306	619	1014	316
Vehicles Circulating, veh/h	717	365	230	772
Vehicles Exiting, veh/h	371	879	793	211
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	12.5	14.0	9.3	14.1
Approach LOS	B	B	A	B

Lane	Left	Left	Left	Right	Left
Designated Moves	LTR	LTR	LT	R	LTR
Assumed Moves	LTR	LTR	LT	R	LTR
RT Channelized					
Lane Util	1.000	1.000	0.317	0.683	1.000
Follow-Up Headway, s	2.609	2.609	2.535	2.535	2.609
Critical Headway, s	4.976	4.976	4.544	4.544	4.976
Entry Flow, veh/h	306	619	321	693	316
Cap Entry Lane, veh/h	664	951	1152	1152	628
Entry HV Adj Factor	0.980	0.981	0.982	0.980	0.980
Flow Entry, veh/h	300	607	315	679	310
Cap Entry, veh/h	651	933	1131	1129	615
V/C Ratio	0.461	0.651	0.279	0.602	0.503
Control Delay, s/veh	12.5	14.0	5.8	10.9	14.1
LOS	B	B	A	B	B
95th %tile Queue, veh	2	5	1	4	3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	41	148	96	441	119	17	161	139	645	25	202	67
Future Volume (vph)	41	148	96	441	119	17	161	139	645	25	202	67
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	Perm	NA	Perm	Perm	NA	Perm
Protected Phases	7	4		3	8			2			6	
Permitted Phases	4		4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	2	2	2	6	6	6
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	15.0	30.0	30.0	15.0	30.0	30.0	75.0	75.0	75.0	75.0	75.0	75.0
Total Split (%)	12.5%	25.0%	25.0%	12.5%	25.0%	25.0%	62.5%	62.5%	62.5%	62.5%	62.5%	62.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag						
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes						
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	16.4	9.9	9.9	24.6	21.2	21.2	16.8	16.8	16.8	16.8	16.8	16.8
Actuated g/C Ratio	0.31	0.19	0.19	0.47	0.40	0.40	0.32	0.32	0.32	0.32	0.32	0.32
v/c Ratio	0.09	0.44	0.27	0.79	0.17	0.03	0.46	0.24	0.74	0.07	0.36	0.13
Control Delay	10.5	25.1	7.6	25.8	16.3	0.1	18.4	13.9	7.9	12.3	15.2	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.5	25.1	7.6	25.8	16.3	0.1	18.4	13.9	7.9	12.3	15.2	4.2
LOS	B	C	A	C	B	A	B	B	A	B	B	A
Approach Delay		17.1			23.1			10.6			12.4	
Approach LOS		B			C			B			B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 52.5	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 15.2	Intersection LOS: B
Intersection Capacity Utilization 68.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Eastonville Rd & Rex Rd

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	825	21	29	505	15	20
Future Vol, veh/h	825	21	29	505	15	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	205	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	868	22	31	532	16	21

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	890	0	1473	879
Stage 1	-	-	-	-	879	-
Stage 2	-	-	-	-	594	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	761	-	140	347
Stage 1	-	-	-	-	406	-
Stage 2	-	-	-	-	552	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	761	-	134	347
Mov Cap-2 Maneuver	-	-	-	-	263	-
Stage 1	-	-	-	-	389	-
Stage 2	-	-	-	-	552	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.5	17.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	263	347	-	-	761	-
HCM Lane V/C Ratio	0.06	0.061	-	-	0.04	-
HCM Control Delay (s)	19.6	16	-	-	9.9	-
HCM Lane LOS	C	C	-	-	A	-
HCM 95th %tile Q(veh)	0.2	0.2	-	-	0.1	-

Intersection	
Intersection Delay, s/veh	9.8
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	890	563	37
Demand Flow Rate, veh/h	907	575	37
Vehicles Circulating, veh/h	32	16	885
Vehicles Exiting, veh/h	559	906	54
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	11.7	6.8	7.2
Approach LOS	B	A	A

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	907	575	37
Cap Entry Lane, veh/h	1336	1358	560
Entry HV Adj Factor	0.981	0.980	1.000
Flow Entry, veh/h	890	563	37
Cap Entry, veh/h	1310	1330	560
V/C Ratio	0.679	0.424	0.066
Control Delay, s/veh	11.7	6.8	7.2
LOS	B	A	A
95th %tile Queue, veh	6	2	0

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	807	38	59	512	22	35
Future Vol, veh/h	807	38	59	512	22	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	205	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	849	40	62	539	23	37

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	889	0	1532	869
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	663	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	762	-	128	351
Stage 1	-	-	-	-	410	-
Stage 2	-	-	-	-	512	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	762	-	118	351
Mov Cap-2 Maneuver	-	-	-	-	241	-
Stage 1	-	-	-	-	377	-
Stage 2	-	-	-	-	512	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	18.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	241	351	-	-	762	-
HCM Lane V/C Ratio	0.096	0.105	-	-	0.082	-
HCM Control Delay (s)	21.5	16.5	-	-	10.1	-
HCM Lane LOS	C	C	-	-	B	-
HCM 95th %tile Q(veh)	0.3	0.3	-	-	0.3	-

Intersection	
Intersection Delay, s/veh	10.4
Intersection LOS	B

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	889	601	60
Demand Flow Rate, veh/h	907	613	61
Vehicles Circulating, veh/h	63	23	866
Vehicles Exiting, veh/h	573	904	104
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	12.7	7.2	7.7
Approach LOS	B	A	A

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	907	613	61
Cap Entry Lane, veh/h	1294	1348	571
Entry HV Adj Factor	0.980	0.981	0.984
Flow Entry, veh/h	889	601	60
Cap Entry, veh/h	1268	1322	561
V/C Ratio	0.701	0.455	0.107
Control Delay, s/veh	12.7	7.2	7.7
LOS	B	A	A
95th %tile Queue, veh	6	2	0

Intersection						
Int Delay, s/veh	2.3					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	766	76	119	526	45	70
Future Vol, veh/h	766	76	119	526	45	70
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	305	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	806	80	125	554	47	74

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	886	0	1610	806
Stage 1	-	-	-	-	806	-
Stage 2	-	-	-	-	804	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	764	-	115	382
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	440	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	764	-	96	382
Mov Cap-2 Maneuver	-	-	-	-	198	-
Stage 1	-	-	-	-	367	-
Stage 2	-	-	-	-	440	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2	21.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	198	382	-	-	764	-
HCM Lane V/C Ratio	0.239	0.193	-	-	0.164	-
HCM Control Delay (s)	28.8	16.7	-	-	10.6	-
HCM Lane LOS	D	C	-	-	B	-
HCM 95th %tile Q(veh)	0.9	0.7	-	-	0.6	-

Intersection	
Intersection Delay, s/veh	12.0
Intersection LOS	B

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	886	679	121
Demand Flow Rate, veh/h	904	693	123
Vehicles Circulating, veh/h	127	48	822
Vehicles Exiting, veh/h	613	897	209
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	15.0	8.5	8.7
Approach LOS	C	A	A

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	904	693	123
Cap Entry Lane, veh/h	1212	1314	597
Entry HV Adj Factor	0.980	0.980	0.984
Flow Entry, veh/h	886	679	121
Cap Entry, veh/h	1188	1287	587
V/C Ratio	0.746	0.527	0.206
Control Delay, s/veh	15.0	8.5	8.7
LOS	C	A	A
95th %tile Queue, veh	7	3	1

Intersection	
Int Delay, s/veh	3.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	693	143	142	561	84	83
Future Vol, veh/h	693	143	142	561	84	83
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	305	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	729	151	149	591	88	87

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	880	0	1618	729
Stage 1	-	-	-	-	729	-
Stage 2	-	-	-	-	889	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	768	-	114	423
Stage 1	-	-	-	-	477	-
Stage 2	-	-	-	-	402	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	768	-	92	423
Mov Cap-2 Maneuver	-	-	-	-	179	-
Stage 1	-	-	-	-	384	-
Stage 2	-	-	-	-	402	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.2	29.6
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	179	423	-	-	768	-
HCM Lane V/C Ratio	0.494	0.207	-	-	0.195	-
HCM Control Delay (s)	43.3	15.7	-	-	10.8	-
HCM Lane LOS	E	C	-	-	B	-
HCM 95th %tile Q(veh)	2.4	0.8	-	-	0.7	-

Intersection	
Intersection Delay, s/veh	12.9
Intersection LOS	B

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	880	740	175
Demand Flow Rate, veh/h	898	755	179
Vehicles Circulating, veh/h	152	90	744
Vehicles Exiting, veh/h	693	833	306
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	16.0	10.2	9.3
Approach LOS	C	B	A

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	898	755	179
Cap Entry Lane, veh/h	1182	1259	646
Entry HV Adj Factor	0.980	0.980	0.978
Flow Entry, veh/h	880	740	175
Cap Entry, veh/h	1159	1234	632
V/C Ratio	0.760	0.600	0.277
Control Delay, s/veh	16.0	10.2	9.3
LOS	C	B	A
95th %tile Queue, veh	8	4	1

Intersection	
Int Delay, s/veh	173.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	250	526	554	383	226	149
Future Vol, veh/h	250	526	554	383	226	149
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	405	-	-	155	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	263	554	583	403	238	157

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	986	0	-	0	1663	583
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	1080	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	701	-	-	-	~ 107	512
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	326	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	701	-	-	-	~ 67	512
Mov Cap-2 Maneuver	-	-	-	-	~ 57	-
Stage 1	-	-	-	-	349	-
Stage 2	-	-	-	-	326	-

Approach	EB	WB	SB
HCM Control Delay, s	4.2	0	$ 955.2
HCM LOS			F

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	701	-	-	-	57	512
HCM Lane V/C Ratio	0.375	-	-	-	4.174	0.306
HCM Control Delay (s)	13.2	-	-	-	$ 1575	15.1
HCM Lane LOS	B	-	-	-	F	C
HCM 95th %tile Q(veh)	1.7	-	-	-	26	1.3

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	12.8
Intersection LOS	B

Approach	EB	WB	SB
Entry Lanes	1	2	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	817	986	395
Demand Flow Rate, veh/h	833	1006	403
Vehicles Circulating, veh/h	243	268	595
Vehicles Exiting, veh/h	755	808	679
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	17.8	8.6	13.1
Approach LOS	C	A	B

Lane	Left	Left	Right	Left
Designated Moves	LT	LT	R	LR
Assumed Moves	LT	LT	R	LR
RT Channelized				
Lane Util	1.000	0.591	0.409	1.000
Follow-Up Headway, s	2.609	2.535	2.535	2.609
Critical Headway, s	4.976	4.544	4.544	4.976
Entry Flow, veh/h	833	595	411	403
Cap Entry Lane, veh/h	1077	1113	1113	752
Entry HV Adj Factor	0.981	0.980	0.981	0.980
Flow Entry, veh/h	817	583	403	395
Cap Entry, veh/h	1056	1091	1091	737
V/C Ratio	0.773	0.535	0.369	0.536
Control Delay, s/veh	17.8	9.7	7.1	13.1
LOS	C	A	A	B
95th %tile Queue, veh	8	3	2	3

Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	250	526	554	383	226	149
Future Volume (vph)	250	526	554	383	226	149
Turn Type	pm+pt	NA	NA	Perm	Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	2			6		4
Detector Phase	5	2	6	6	4	4
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	15.0	90.0	75.0	75.0	30.0	30.0
Total Split (%)	12.5%	75.0%	62.5%	62.5%	25.0%	25.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None	C-Max	None	None	Max	Max
Act Effct Green (s)	85.0	85.0	70.3	70.3	25.0	25.0
Actuated g/C Ratio	0.71	0.71	0.59	0.59	0.21	0.21
v/c Ratio	0.53	0.42	0.53	0.37	0.65	0.35
Control Delay	10.1	8.4	37.7	18.9	52.7	8.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.1	8.4	37.7	18.9	52.7	8.3
LOS	B	A	D	B	D	A
Approach Delay		9.0	30.0		35.1	
Approach LOS		A	C		D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:EBTL, Start of Green	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 23.1	Intersection LOS: C
Intersection Capacity Utilization 68.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 6: Rex Rd & Residential Collector

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	620	105	246	932	62	145
Future Vol, veh/h	620	105	246	932	62	145
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	155	405	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	653	111	259	981	65	153

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	764	0	2152	653
Stage 1	-	-	-	-	653	-
Stage 2	-	-	-	-	1499	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	849	-	~ 53	467
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	204	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	849	-	~ 37	467
Mov Cap-2 Maneuver	-	-	-	-	~ -84	-
Stage 1	-	-	-	-	360	-
Stage 2	-	-	-	-	204	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	
HCM LOS			-

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	+	467	-	-	849	-
HCM Lane V/C Ratio	-	0.327	-	-	0.305	-
HCM Control Delay (s)	-	16.4	-	-	11.1	-
HCM Lane LOS	-	C	-	-	B	-
HCM 95th %tile Q(veh)	-	1.4	-	-	1.3	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	22.6
Intersection LOS	C

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	764	1240	218
Demand Flow Rate, veh/h	779	1265	222
Vehicles Circulating, veh/h	264	66	666
Vehicles Exiting, veh/h	1067	822	377
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	13.4	30.9	7.6
Approach LOS	B	D	A

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	779	1265	222
Cap Entry Lane, veh/h	1135	1343	806
Entry HV Adj Factor	0.981	0.981	0.982
Flow Entry, veh/h	764	1240	218
Cap Entry, veh/h	1113	1316	792
V/C Ratio	0.687	0.942	0.275
Control Delay, s/veh	13.4	30.9	7.6
LOS	B	D	A
95th %tile Queue, veh	6	17	1

Intersection	
Int Delay, s/veh	170.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	698	32	121	1087	131	44	0	104	113	0	48
Future Vol, veh/h	35	698	32	121	1087	131	44	0	104	113	0	48
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	155	200	-	0	0	-	-	0	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	735	34	127	1144	138	46	0	109	119	0	51

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1282	0	0	769	0	0	2302	2345	735	2279	2241	1144
Stage 1	-	-	-	-	-	-	809	809	-	1398	1398	-
Stage 2	-	-	-	-	-	-	1493	1536	-	881	843	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	541	-	-	845	-	-	~ 27	36	420	~ 28	42	243
Stage 1	-	-	-	-	-	-	374	394	-	174	207	-
Stage 2	-	-	-	-	-	-	154	178	-	341	380	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	541	-	-	845	-	-	~ 18	29	420	~ 17	33	243
Mov Cap-2 Maneuver	-	-	-	-	-	-	~ 18	29	-	~ 17	33	-
Stage 1	-	-	-	-	-	-	349	367	-	162	176	-
Stage 2	-	-	-	-	-	-	104	151	-	235	354	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.6	0.9	$ 355.4	$ 2213.2
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	18	420	541	-	-	845	-	-	17	243
HCM Lane V/C Ratio	2.573	0.261	0.068	-	-	0.151	-	-	6.997	0.208
HCM Control Delay (s)	$ 1156.3	16.6	12.1	-	-	10	-	-	$ 3143.2	23.7
HCM Lane LOS	F	C	B	-	-	B	-	-	F	C
HCM 95th %tile Q(veh)	6.3	1	0.2	-	-	0.5	-	-	15.6	0.8

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Intersection Delay, s/veh	8.9
Intersection LOS	A

Approach	EB	WB	NB	SB
Entry Lanes	2	2	1	1
Conflicting Circle Lanes	2	2	2	2
Adj Approach Flow, veh/h	806	1409	155	170
Demand Flow Rate, veh/h	823	1438	158	173
Vehicles Circulating, veh/h	251	85	909	1344
Vehicles Exiting, veh/h	1266	982	165	179
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	7.1	9.2	8.6	14.9
Approach LOS	A	A	A	B

Lane	Left	Right	Left	Right	Left	Left
Designated Moves	LT	TR	LT	TR	LTR	LTR
Assumed Moves	LT	TR	LT	TR	LTR	LTR
RT Channelized						
Lane Util	0.470	0.530	0.470	0.530	1.000	1.000
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.535	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.328	4.328
Entry Flow, veh/h	387	436	676	762	158	173
Cap Entry Lane, veh/h	1072	1147	1248	1321	656	453
Entry HV Adj Factor	0.979	0.980	0.980	0.980	0.981	0.983
Flow Entry, veh/h	379	427	662	747	155	170
Cap Entry, veh/h	1049	1124	1223	1295	643	445
V/C Ratio	0.361	0.380	0.542	0.577	0.241	0.382
Control Delay, s/veh	7.2	7.1	9.1	9.4	8.6	14.9
LOS	A	A	A	A	A	B
95th %tile Queue, veh	2	2	3	4	1	2

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	SBL	SBT
Lane Configurations										
Traffic Volume (vph)	35	698	32	121	1087	131	44	0	113	0
Future Volume (vph)	35	698	32	121	1087	131	44	0	113	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA	Perm	NA
Protected Phases		2			6			8		4
Permitted Phases	2		2	6		6	8		4	
Detector Phase	2	2	2	6	6	6	8	8	4	4
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	95.0	95.0	95.0	95.0	95.0	95.0	25.0	25.0	25.0	25.0
Total Split (%)	79.2%	79.2%	79.2%	79.2%	79.2%	79.2%	20.8%	20.8%	20.8%	20.8%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag										
Lead-Lag Optimize?										
Recall Mode	None	None	None	None	None	None	C-Max	C-Max	C-Max	C-Max
Act Effct Green (s)	58.4	58.4	58.4	58.4	58.4	58.4	51.6	51.6	51.6	51.6
Actuated g/C Ratio	0.49	0.49	0.49	0.49	0.49	0.49	0.43	0.43	0.43	0.43
v/c Ratio	0.30	0.43	0.04	0.47	0.66	0.16	0.08	0.13	0.22	0.07
Control Delay	17.4	15.2	1.6	42.0	44.3	17.3	25.4	0.3	26.3	0.2
Queue Delay	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0
Total Delay	17.4	15.2	1.6	42.0	44.6	17.3	25.4	0.3	26.3	0.2
LOS	B	B	A	D	D	B	C	A	C	A
Approach Delay		14.7			41.7			7.8		18.5
Approach LOS		B			D			A		B

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 4:SBTL and 8:NBTL, Start of Green	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.66	
Intersection Signal Delay: 29.5	Intersection LOS: C
Intersection Capacity Utilization 59.6%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 8: C-1/C-2 & Rex Rd

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	148	767	1179	1044	980	160
Future Volume (vph)	148	767	1179	1044	980	160
Turn Type	Prot	Free	Prot	NA	NA	Perm
Protected Phases	6		7	4	8	
Permitted Phases		Free				8
Detector Phase	6		7	4	8	8
Switch Phase						
Minimum Initial (s)	5.0		5.0	5.0	5.0	5.0
Minimum Split (s)	20.0		10.0	20.0	20.0	20.0
Total Split (s)	25.0		54.0	95.0	41.0	41.0
Total Split (%)	20.8%		45.0%	79.2%	34.2%	34.2%
Yellow Time (s)	3.0		3.0	3.0	3.0	3.0
All-Red Time (s)	2.0		2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0		5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	Max		None	C-Max	C-Max	C-Max
Act Effct Green (s)	20.0	120.0	47.3	90.0	37.7	37.7
Actuated g/C Ratio	0.17	1.00	0.39	0.75	0.31	0.31
v/c Ratio	0.53	0.51	0.92	0.40	0.93	0.28
Control Delay	53.0	1.2	46.1	5.9	55.0	8.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.0	1.2	46.1	5.9	55.0	8.4
LOS	D	A	D	A	D	A
Approach Delay	9.6			27.5	48.4	
Approach LOS	A			C	D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 15 (13%), Referenced to phase 4:NBT and 8:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.93	
Intersection Signal Delay: 29.3	Intersection LOS: C
Intersection Capacity Utilization 81.4%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 9: US 24 & Rex Rd

Intersection	
Int Delay, s/veh	2.4

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	66	36	945	112	62	675
Future Vol, veh/h	66	36	945	112	62	675
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	69	38	995	118	65	711

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1836	995	0	0	1113	0
Stage 1	995	-	-	-	-	-
Stage 2	841	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	83	297	-	-	627	-
Stage 1	358	-	-	-	-	-
Stage 2	423	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	74	297	-	-	627	-
Mov Cap-2 Maneuver	188	-	-	-	-	-
Stage 1	321	-	-	-	-	-
Stage 2	423	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	37.1	0	1
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	216	627	-
HCM Lane V/C Ratio	-	-	0.497	0.104	-
HCM Control Delay (s)	-	-	37.1	11.4	-
HCM Lane LOS	-	-	E	B	-
HCM 95th %tile Q(veh)	-	-	2.5	0.3	-

Intersection	
Intersection Delay, s/veh	15.1
Intersection LOS	C

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	107	1113	776
Demand Flow Rate, veh/h	109	1135	791
Vehicles Circulating, veh/h	1015	66	70
Vehicles Exiting, veh/h	186	795	1054
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	8.4	19.6	9.6
Approach LOS	A	C	A

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	109	1135	791
Cap Entry Lane, veh/h	599	1343	1338
Entry HV Adj Factor	0.982	0.981	0.981
Flow Entry, veh/h	107	1113	776
Cap Entry, veh/h	588	1317	1312
V/C Ratio	0.182	0.845	0.591
Control Delay, s/veh	8.4	19.6	9.6
LOS	A	C	A
95th %tile Queue, veh	1	11	4

Intersection						
Int Delay, s/veh	1					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	34	18	1040	57	32	709
Future Vol, veh/h	34	18	1040	57	32	709
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	36	19	1095	60	34	746

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1909	1095	0	0	1155	0
Stage 1	1095	-	-	-	-	-
Stage 2	814	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	75	260	-	-	605	-
Stage 1	321	-	-	-	-	-
Stage 2	436	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	71	260	-	-	605	-
Mov Cap-2 Maneuver	189	-	-	-	-	-
Stage 1	303	-	-	-	-	-
Stage 2	436	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	28.2	0	0.5
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	SBL	SBT
Capacity (veh/h)	-	-	209	605	-
HCM Lane V/C Ratio	-	-	0.262	0.056	-
HCM Control Delay (s)	-	-	28.2	11.3	-
HCM Lane LOS	-	-	D	B	-
HCM 95th %tile Q(veh)	-	-	1	0.2	-

Intersection	
Intersection Delay, s/veh	17.7
Intersection LOS	C

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	55	1155	780
Demand Flow Rate, veh/h	56	1178	796
Vehicles Circulating, veh/h	1117	35	37
Vehicles Exiting, veh/h	96	798	1136
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	10.1	23.3	9.8
Approach LOS	B	C	A

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	56	1178	796
Cap Entry Lane, veh/h	442	1331	1329
Entry HV Adj Factor	0.982	0.981	0.980
Flow Entry, veh/h	55	1155	780
Cap Entry, veh/h	434	1306	1302
V/C Ratio	0.127	0.885	0.599
Control Delay, s/veh	10.1	23.3	9.8
LOS	B	C	A
95th %tile Queue, veh	0	13	4

Intersection						
Int Delay, s/veh	1.6					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	168	177	307	1025	668	112
Future Vol, veh/h	168	177	307	1025	668	112
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	0	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	177	186	323	1079	703	118

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2428	703	821	0	-	0
Stage 1	703	-	-	-	-	-
Stage 2	1725	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 35	438	808	-	-	-
Stage 1	491	-	-	-	-	-
Stage 2	~ 158	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 21	438	808	-	-	-
Mov Cap-2 Maneuver	~ -510	-	-	-	-	-
Stage 1	295	-	-	-	-	-
Stage 2	~ 158	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s		2.9	0
HCM LOS	-		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	808	-	+	438	-	-
HCM Lane V/C Ratio	0.4	-	-	0.425	-	-
HCM Control Delay (s)	12.4	-	-	19.2	-	-
HCM Lane LOS	B	-	-	C	-	-
HCM 95th %tile Q(veh)	1.9	-	-	2.1	-	-

Notes
~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection						
Intersection Delay, s/veh	15.7					
Intersection LOS	C					

Approach		EB		NB		SB
Entry Lanes		2		2		2
Conflicting Circle Lanes		2		2		2
Adj Approach Flow, veh/h		363		1402		821
Demand Flow Rate, veh/h		371		1430		837
Vehicles Circulating, veh/h		717		181		329
Vehicles Exiting, veh/h		449		907		1282
Ped Vol Crossing Leg, #/h		0		0		0
Ped Cap Adj		1.000		1.000		1.000
Approach Delay, s/veh		8.0		22.2		7.9
Approach LOS		A		C		A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	L	TR	LT	TR
Assumed Moves	L	TR	L	TR	LT	TR
RT Channelized						
Lane Util	0.488	0.512	0.230	0.770	0.470	0.530
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	181	190	329	1101	393	444
Cap Entry Lane, veh/h	698	772	1143	1218	997	1074
Entry HV Adj Factor	0.978	0.979	0.982	0.980	0.982	0.980
Flow Entry, veh/h	177	186	323	1079	386	435
Cap Entry, veh/h	683	756	1122	1194	979	1052
V/C Ratio	0.259	0.246	0.288	0.904	0.394	0.414
Control Delay, s/veh	8.4	7.5	5.9	27.1	8.0	7.9
LOS	A	A	A	D	A	A
95th %tile Queue, veh	1	1	1	14	2	2

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	168	177	307	1025	668	112
Future Volume (vph)	168	177	307	1025	668	112
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	20.0	20.0	10.0	20.0	20.0	20.0
Total Split (s)	30.0	30.0	15.0	90.0	75.0	75.0
Total Split (%)	25.0%	25.0%	12.5%	75.0%	62.5%	62.5%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	11.0	11.0	33.9	33.9	18.6	18.6
Actuated g/C Ratio	0.20	0.20	0.62	0.62	0.34	0.34
v/c Ratio	0.50	0.40	0.63	0.50	0.59	0.19
Control Delay	26.1	6.9	12.5	7.0	17.3	4.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.1	6.9	12.5	7.0	17.3	4.0
LOS	C	A	B	A	B	A
Approach Delay	16.2			8.3	15.4	
Approach LOS	B			A	B	

Intersection Summary

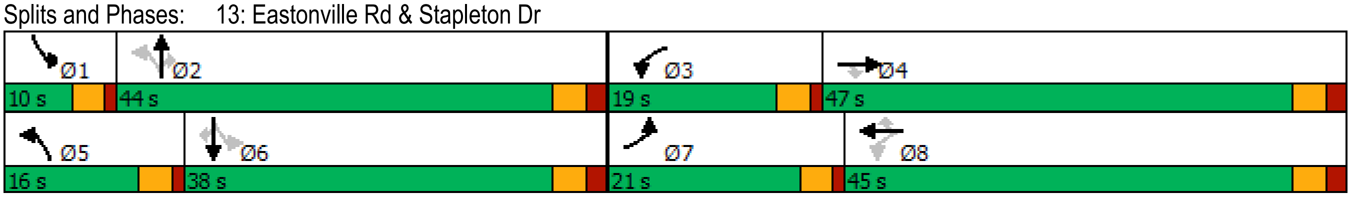
Cycle Length: 120
Actuated Cycle Length: 55
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 11.6 Intersection LOS: B
Intersection Capacity Utilization 57.3% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 12: Eastonville Rd & Londonderry Dr

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	509	920	160	183	1264	232	251	592	169	178	370	286
Future Volume (vph)	509	920	160	183	1264	232	251	592	169	178	370	286
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	21.0	47.0	47.0	19.0	45.0	45.0	16.0	44.0	44.0	10.0	38.0	38.0
Total Split (%)	17.5%	39.2%	39.2%	15.8%	37.5%	37.5%	13.3%	36.7%	36.7%	8.3%	31.7%	31.7%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	17.0	44.6	44.6	53.4	40.0	40.0	50.0	39.0	39.0	40.0	33.0	33.0
Actuated g/C Ratio	0.14	0.37	0.37	0.44	0.33	0.33	0.42	0.32	0.32	0.33	0.28	0.28
v/c Ratio	1.10	0.71	0.24	0.68	1.09	0.38	0.89	1.03	0.30	1.23	0.76	0.47
Control Delay	119.3	36.4	6.0	30.3	94.0	12.4	58.5	84.6	11.1	175.5	50.8	7.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	119.3	36.4	6.0	30.3	94.0	12.4	58.5	84.6	11.1	175.5	50.8	7.9
LOS	F	D	A	C	F	B	E	F	B	F	D	A
Approach Delay		60.4			75.4			65.9			62.6	
Approach LOS		E			E			E			E	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Natural Cycle: 130	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.23	
Intersection Signal Delay: 66.7	Intersection LOS: E
Intersection Capacity Utilization 105.5%	ICU Level of Service G
Analysis Period (min) 15	

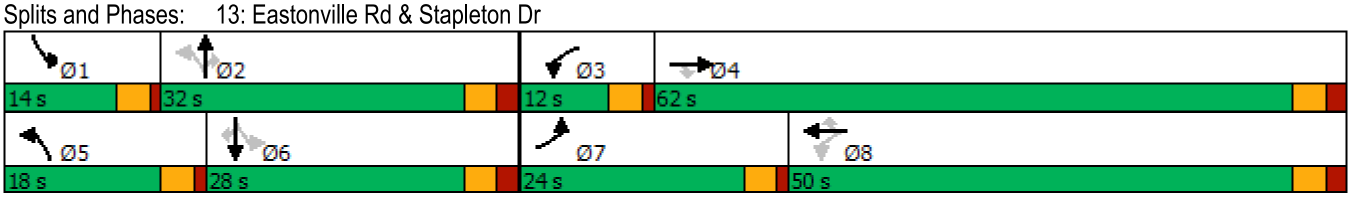
Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	509	920	160	183	1264	232	251	592	169	178	370	286
Future Volume (vph)	509	920	160	183	1264	232	251	592	169	178	370	286
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			4	8		8	2		2	6		6
Detector Phase	7	4	4	3	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	24.0	62.0	62.0	12.0	50.0	50.0	18.0	32.0	32.0	14.0	28.0	28.0
Total Split (%)	20.0%	51.7%	51.7%	10.0%	41.7%	41.7%	15.0%	26.7%	26.7%	11.7%	23.3%	23.3%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0	1.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0	4.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	19.9	56.9	56.9	53.9	45.0	45.0	40.1	25.2	25.2	32.4	21.3	21.3
Actuated g/C Ratio	0.17	0.48	0.48	0.46	0.38	0.38	0.34	0.21	0.21	0.27	0.18	0.18
v/c Ratio	0.93	0.55	0.20	0.62	0.96	0.34	0.81	0.82	0.37	0.87	0.61	0.59
Control Delay	72.1	23.4	3.2	23.8	52.6	9.8	50.9	54.5	7.9	67.0	49.0	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	72.1	23.4	3.2	23.8	52.6	9.8	50.9	54.5	7.9	67.0	49.0	12.0
LOS	E	C	A	C	D	A	D	D	A	E	D	B
Approach Delay		37.2			43.3			45.8			40.1	
Approach LOS		D			D			D			D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 118.1	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 41.4	Intersection LOS: D
Intersection Capacity Utilization 90.7%	ICU Level of Service E
Analysis Period (min) 15	

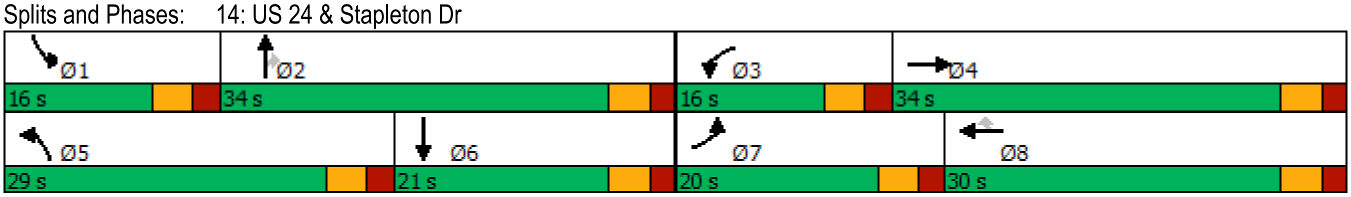
Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	399	556	432	200	784	204	798	1626	175	276	1004	474
Future Volume (vph)	399	556	432	200	784	204	798	1626	175	276	1004	474
Turn Type	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			8			2			Free
Detector Phase	7	4		3	8	8	5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	10.0	10.0		10.0	10.0	10.0	10.0	11.0	11.0	10.0	11.0	
Total Split (s)	20.0	34.0		16.0	30.0	30.0	29.0	34.0	34.0	16.0	21.0	
Total Split (%)	20.0%	34.0%		16.0%	30.0%	30.0%	29.0%	34.0%	34.0%	16.0%	21.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	
Act Effct Green (s)	14.6	29.4	99.6	10.2	25.0	25.0	24.0	29.2	29.2	10.8	16.0	99.6
Actuated g/C Ratio	0.15	0.30	1.00	0.10	0.25	0.25	0.24	0.29	0.29	0.11	0.16	1.00
v/c Ratio	0.83	0.56	0.29	0.60	0.93	0.39	0.99	1.60	0.33	0.78	1.80	0.32
Control Delay	56.9	32.3	0.5	50.2	54.7	6.5	66.6	303.4	11.0	58.9	395.9	0.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.9	32.3	0.5	50.2	54.7	6.5	66.6	303.4	11.0	58.9	395.9	0.5
LOS	E	C	A	D	D	A	E	F	B	E	F	A
Approach Delay		29.5			45.6			210.6			233.1	
Approach LOS		C			D			F			F	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 99.6	
Natural Cycle: 140	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 1.80	
Intersection Signal Delay: 150.7	Intersection LOS: F
Intersection Capacity Utilization 102.5%	ICU Level of Service G
Analysis Period (min) 15	

Splits and Phases: 14: US 24 & Stapleton Dr



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Grandview Reserve Phase 1
Updated Traffic Impact Analysis
PUDSP-21-010

(LSC #S214240)
May 9, 2022

Traffic Engineer's Statement

This traffic report and supporting information were prepared under my responsible charge and they comport with the standard of care. So far as is consistent with the standard of care, said report was prepared in general conformance with the criteria established by the County for traffic reports.

COLORADO LICENSED
JEFFREY C. HODSDON
31684
5-9-22
PROFESSIONAL ENGINEER

Developer's Statement

I, the Developer, have read and will comply with all commitments made on my behalf within this report.

PAUL J. HOWARD AS MANAGER

05/09/2022
Date

Grandview Reserve Phase 1

Updated Traffic Impact Analysis

PUD SP2110

Prepared for:
Mr. Phil Stuepfert
HR Green
5619 DTC Parkway – Suite 1150
Greenwood Village, CO 80111

MAY 9, 2022

LSC Transportation Consultants, Inc.

Prepared by: Jeffrey C. Hodsdon, P.E. and Kirstin D. Ferrin, P.E.

LSC #S214240

CONTENTS

REPORT CONTENTS 1
PREVIOUS TRAFFIC REPORTS 2
LAND USE AND ACCESS 2
Site Plan 2
Site Access 2
Deviation Request 3
Pedestrian and Bicycle Accommodations 3
Sight Distance Analysis 4
ROADWAY AND TRAFFIC CONDITIONS 4
Area Roadways 4
Existing (2021) Traffic Volumes 5
Existing Levels of Service 5
Safety Analysis 6
SHORT-TERM (YEAR 2026) BACKGROUND TRAFFIC 7
2041 BACKGROUND TRAFFIC 8
TRIP GENERATION 8
DIRECTIONAL DISTRIBUTION AND ASSIGNMENT 9
TOTAL TRAFFIC 10
PROJECTED LEVELS OF SERVICE 10
Rex/Eastonville 10
Rex Road/Ivybridge Boulevard 11
Eastonville/Dawlish Drive 11
Eastonville/Brixham Drive 12
Londonderry/Eastonville 12
Stapleton/Eastonville 12
US Hwy 24 Intersection/Stapleton 13
QUEUING ANALYSIS 13
FUNCTIONAL CLASSIFICATIONS AND LANEAGE 14
MULTI-MODAL AND PEDESTRIAN/BIKE TRANSPORTATION 15
TRANSPORTATION IMPROVEMENT FEE PROGRAM 16
Project Fees 16
Potentially Reimbursable Improvements Under the MTCP Fee Program 16

Enclosures: 18
Tables 2-5
Figures 1-13
Appendix Table 1
MTCP Maps
Map 15 Bicycle and Pedestrian Network Improvements
Traffic Count Reports
Crash History Data
Level of Service Reports
Queuing Reports

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May 9, 2022

Mr. Phil Stuepfert
HR Green
5619 DTC Parkway – Suite 1150
Greenwood Village, CO 80111

RE: Grandview Reserve Phase 1
El Paso County, Colorado
Updated Traffic Impact Analysis
LSC #S214240

Dear Phil:

In response to your request, LSC Transportation Consultants, Inc. has prepared this updated traffic impact analysis for Phase 1 of the Grandview Reserve development in El Paso County, Colorado. As shown in Figure 1, the Phase 1 area is located east of Eastonville Road across from the Falcon Regional Park.

REPORT CONTENTS

This report is being submitted as part of a Preliminary Plan/PUD submittal for Phase 1. It also provides technical information and analysis in support of a deviation request associated with a proposed Phase 1 access to Rex Road, 575 feet east of Eastonville Road.

The report contains the following:

- The traffic count data and street conditions;
- Short-term and 2041 baseline/background traffic-volume estimates;
- The projected average weekday and peak-hour vehicle trips to be generated by the site;
- The assignment of the site's projected traffic volumes to the key area streets and intersections for the short and long term and the resulting total traffic volumes for the short and long term;
- The resulting traffic impacts including level of service analysis at key intersections; and
- Findings and recommendations.

PREVIOUS TRAFFIC REPORTS

LSC completed a Master Traffic Impact Study (TIS) for Grandview Reserve (Sketch Plan) dated December 15, 2020. That report assumed the initial development would occur on the parcels on the east end of the overall development with access to US Highway 24 (US Hwy 24) only. Initial development is now planned to occur on the west side of the site with access only to Eastonville Road and the initial segment of Rex Road east of Eastonville.

A list of other traffic studies in the area of study completed within the past five years (that LSC is aware of) is attached for reference. This study accounts for the land use, trip generation, and the roadway network included in these studies. The older previous area studies generally assumed Rex Road would not extend from Eastonville Road to US Hwy 24 in the 20-year horizon as is now planned. The older previous studies also assumed fewer dwelling units on this site.

A traffic report, entitled Eastonville Road Project Conceptual Design Report was also recently completed for Eastonville Road by Wilson & Company (for El Paso County).

LAND USE AND ACCESS

Site Plan

Figure 2 shows the proposed site plan for Phase 1 of Grandview Reserve. The initial phase is planned include about 189.5 acres and is planned to contain 565 lots for single-family homes, an 11.2-acre church site, and an “amenity center” that is planned to include a 3,000-square-foot community recreation center. Plans for the church site are still preliminary; however, this report assumes the church site will be developed with a 500-seat sanctuary and that the church will offer preschool classes during the week. At this time, there is no plan to phase construction. The Phase 1 plan is consistent with the land uses assumed for this same area in the Master TIS.

Site Access

Two public-street connections, Dawlish Drive and Brixham Drive, are proposed to Eastonville Road and one full-movement access point, Ivybridge Boulevard, is proposed to an extension of Rex Road as part of Phase 1. The intersections with Eastonville and Rex are proposed as full-movement intersections.

Ivybridge Boulevard is proposed as a “T” intersection. The intention is that this intersection would remain a “T” in perpetuity. If future access is needed for the parcels north of Rex Road, it was assumed this access would occur via a second (offset) “T” intersection east of this currently proposed Phase 1 access intersection.

Dawlish Drive could potentially align with a future access point for future park-facilities development within the Falcon Regional Park. However, there are currently no known plans for an access at this location and, based on existing wetlands areas and the location of planned drainage basins, it is likely that Dawlish Drive/Eastonville Road will remain a “T” intersection in perpetuity.

Brixham Drive could potentially align with a future access point to the Meridian Ranch school site located north of Falcon High School. However, as future plans for the school have not been determined, it was assumed that Brixham Drive will also operate as a “T” intersection. Figure 2 shows the proposed spacing of the access points.

Based on the criteria contained in the El Paso County *Engineering Criteria Manual* (*ECM*), the required intersection spacing for Minor Arterial roadways is ¼ mile (1,320 feet). Both proposed public street access points to Eastonville Road meet the intersection spacing criteria. However, the access to Rex Road is proposed to be located about 575 feet east of Eastonville Road. This access will require a deviation to the *ECM* criteria.

Two access points are proposed from Ivybridge to the church site. The north access point is proposed as a full-movement access (allowing left and right turns). The south access point is proposed as a right-in/right-out access.

Deviation Request

A deviation request for the proposed full-movement intersection of Rex Road/ Ivybridge Boulevard 575 feet east of Eastonville Road (centerline spacing) is part of this application. The proposed plan for Grandview Reserve Phase 1 is to extend a public street south from Rex Road at this location to serve as one of the access points to this relatively large development. Given this proposed spacing and limited distance for future back-to-back left-turn lanes between this proposed intersection and the Eastonville/Rex intersection, the intent would be that this intersection would be a T intersection with a street on the south side only. Please refer to the associated deviation request form for additional detail.

Pedestrian and Bicycle Accommodations

There are two existing school sites located within two miles of the site, Falcon High School and Meridian Ranch Elementary. A future K-8 school is planned just north of Falcon High School. These schools are located north of Londonderry Drive and west of Eastonville Road. There is also a regional park located just west of the site.

The likely pedestrian path to the school and park sites is Eastonville Road to Londonderry Drive. There are currently sidewalks and school crossings on Londonderry Drive. There are currently no sidewalks on Eastonville Road. However, the *2016 Major Transportation Corridors Plan* (*MTCP*) shows a proposed primary regional trail along this corridor. The cross section for Eastonville Road north of Stapleton Drive recommended in the *Eastonville Road Conceptual Design* Report dated April 2021 includes an 8-foot detached meandering sidewalk on both sides of the roadway. The

Grandview Reserve site plan includes a trail located outside of the Eastonville right-of-way but within their 30-foot landscape buffer to meet the regional trail requirement. Figure 2 shows the location of the proposed regional trail and other proposed trails within the Grandview Reserve development. All of the internal streets within the Phase 1 area will have sidewalks.
The Rock Island Regional Trail extends southwest to northeast along the US Hwy 24 site frontage (on the north side of the highway).

Sight Distance Analysis

Figure 3a shows a sight-distance analysis at the proposed future intersection with Rex Road just east of Eastonville Road. Figures 3b and 3c show the sight-distance analysis at the future site access points to Eastonville Road. Based on a design speed of 40 miles per hour (mph) and the criteria contained in Table 2-21 of the *ECM*, the required intersection sight distance at these access points is 445 feet. Based on the criteria contained in Table 2-17 of the *ECM*, the required stopping sight distance approaching this intersection is 305 feet. As shown in Figures 3a, 3b, and 3c, the *ECM* criteria can be met at all three of the intersections analyzed.

ROADWAY AND TRAFFIC CONDITIONS

Area Roadways

The major roadways in the site's vicinity are shown in Figure 1 and are described below. Copies of the 2016 El Paso *County Major Transportation Corridors Plan* (*MTCP*) *2040 Roadway Plan*, and 2016 *MTCP 2060 Corridor Preservation Plan* (CPP) with the site location identified on them have been attached to this report.

Eastonville Road extends northeast from Meridian Road to past Hodgen Road. It is shown as a two-lane Minor Arterial on the El Paso County *Major Transportation Corridors Plan* and the *Preserved Corridor Network Plan*. Eastonville Road has a three-lane cross-section (one through lane in each direction plus a center two-way, left-turn lane) from Woodmen Hills Drive to Snaffle Bit Road (approximately midway between Judge Orr Road and Stapleton Road). Eastonville Road is a two-lane roadway north and south of this section. Eastonville Road is currently unpaved north of Londonderry Drive. Pikes Peak Rural Transportation Authority (PPRTA)-funded improvements are anticipated in the future at the intersection of Eastonville Road and Stapleton Drive that would likely add northbound and southbound left-turn lanes. The posted speed limit north of Stapleton Drive is 35 mph.

Rex Road extends east from Goodson Road to Pyramid Peak Drive within the Meridian Ranch development. The posted speed limit on Rex Road is 45 mph between Meridian Road and Mt. Gateway Drive and 35 mph east of Mt. Gateway Drive. The future section of Rex Road between Eastonville Road and US Hwy 24 is shown as a 4-Lane Minor Arterial roadway on the *2016 MTCP 2060 Corridor Preservation Plan* (*CPP*). The *CPP* shows Rex Road extending east from Eastonville Road along the north boundary of the site and terminating at Elbert Road just north of US Hwy 24. **However**, as part of the Grandview Reserve Sketch Plan, coordination with El Paso

County, the Colorado Department of Transportation (CDOT), and other local agencies, and associated applications to CDOT, Rex Road is planned to be constructed southeast through Grandview Reserve and will intersect US Hwy 24 (with future phases beyond Phase 1) about 4,255 feet south of Elbert Road and 6,407 feet north of Stapleton Drive. This is shown in Figure 2. The access permit is currently being prepared.

US Highway 24 (US Hwy 24) is generally a two-lane State Highway extending east/west across Colorado connecting the Buena Vista, Colorado Springs, and Limon areas. US Hwy 24 is planned to be widened to four lanes through the Falcon area. The US Hwy 24 PEL identifies this widening as a high priority with a timeline of less than 10 years. US Hwy 24 in the vicinity is classified as an EX – Expressway/Major Bypass by the Colorado Department of Transportation (CDOT). US Hwy 24 is shown as a four-lane Principal Arterial on the *MTCP* and the *Preserved Corridor Network Plan*. The posted speed limit on US Hwy 24 adjacent to the site is 65 miles per hour (mph).

Stapleton Drive is shown as an Urban four-lane Principal Arterial on the El Paso County *Major Transportation Corridors Plan* and El Paso County *Corridor Preservation Plan (CPP)*. Stapleton Drive extends east from Towner Drive to US Hwy 24. Stapleton continues southeast, then south as Curtis Road. It is planned to be ultimately extended west to connect with the Briargate Parkway extension. Stapleton Drive currently is a half-section of a four-lane Principal Arterial street (one through lane in each direction) between Meridian Road and US Hwy 24. The posted speed limit between Eastonville Road and US Hwy 24 is 45 mph.

Existing (2021) Traffic Volumes

Figure 4a shows the existing morning and afternoon peak-hour traffic volumes at the intersections of Stapleton/US 24, Stapleton/Eastonville, and Londonderry/Eastonville. These volumes are based on manual intersection turning-movement counts conducted by LSC in April 2021 (Eastonville/Londonderry) and October 2021 (Stapleton/US Hwy 24 and Stapleton/Eastonville). The morning peak hour at the intersection of Stapleton/US Hwy 24 and Stapleton/Eastonville occurred from 6:45 a.m. to 7:40 a.m. The morning peak hour at the intersection of Eastonville/Londonderry occurred from 7:00 a.m. to 8:00 a.m. The afternoon peak hour at all three intersections occurred from 4:00 p.m. to 5:00 p.m. The northbound left-turn and eastbound right-turn volume at the intersection of Eastonville/Londonderry were adjusted (increased) to account for the minor differences due to seasonal variations and/or the difference in the peak hour. The count-data sheets are attached for reference.

Existing Levels of Service

Level of service (LOS) is a quantitative measure of the level of delay at an intersection. Level of service is indicated on a scale from “A” to “F.” LOS A represents control delay of less than 10 seconds for unsignalized and signalized intersections. LOS F represents control delay of more than 50 seconds for unsignalized intersections and more than 80 seconds for signalized intersections. Table 1 shows the level of service delay ranges.

Table 1: Intersection Levels of Service Delay Ranges

Level of Service	Signalized Intersections Average Control Delay (seconds per vehicle)	Unsignalized Intersections Average Control Delay (seconds per vehicle)(1)
A	10 sec or less	10 sec or less
B	10-20 sec	10-15 sec
C	20-35 sec	15-25 sec
D	35-55 sec	25-35 sec
E	55-80 sec	35-50 sec
F	80 sec or more	50 sec or more

(1) For unsignalized intersections if V/C ratio is greater than 1.0 the level of service is LOS F regardless of the projected average control delay per vehicle.

Figure 4b presents the results of the existing intersection level of service analysis based on the unsignalized method of analysis procedures from the *Highway Capacity Manual, 6th Edition* by the Transportation Research Board. The peak-hour factors used for each approach are based on the traffic volumes for the peak fifteen minutes of the entire intersection. If the peak 15 minutes for an approach occurs during an interval other than the peak 15 minutes of the entire intersection, the suggested peak-hour value based on the total approach volume from Table 9-1 of the Synchro Studio 10 User Guide was used instead. The level of service reports are attached.

The eastbound and westbound left-turn and through lanes at the two-way, stop-sign-controlled intersection of US 24/Stapleton are currently operating at LOS E or LOS F during the peak hours.

The eastbound approach at the two-way, stop-sign-controlled intersection of Stapleton/Eastonville is currently operating at LOS F during the morning peak hour and LOS C during the afternoon peak hour.

The eastbound left-turn movement at the two-way, stop-sign-controlled intersection of Eastonville/Londonderry is currently operating at a LOS D during the morning peak hour and LOS B during the afternoon peak hour.

Safety Analysis

The Colorado State Patrol provided LSC with three years of vehicle-crash data for Eastonville Road between Stapleton Drive and Latigo Boulevard.

There were eight reported crashes at the intersection of Eastonville/Stapleton the past three years, one in 2019, three in 2020 and four between January 29, 2021 and February 3, 2022. The four crashes reported between January 29, 2021 and February 3, 2022 involved motorists on the side street (on one of the stop-sign-controlled approaches) failing to yield right-of-way to the major street traffic. All of these crashes are likely susceptible to correction by a traffic-control signal and have occurred within approximately a 12-month period. In order to meet a traffic-signal warrant based on crash experience, there needs to be at least five crashes susceptible to correction within a twelve-month period, therefore this intersection does not currently meet this warrant.

There were two crashes reported at the intersection of Londonderry/Eastonville during the past three years. Both crashes involved a single vehicle and would not likely be susceptible to correction by a traffic-control signal.

Two additional crashes were reported along this corridor. The first crashed occurred within the parking lot of Falcon Regional Park and not on Eastonville Road. The location of the second accident is not clear. However, as the road surface code was reported as “dirt” it was assumed to have occurred at a location north of Londonderry Drive. This crash was a single-vehicle crash that lost control while traveling northbound.

It should be noted that the short-term improvements to Eastonville Road, currently in the planning and preliminary design stage, will likely improve the safety of the entire corridor.

SHORT-TERM (YEAR 2026) BACKGROUND TRAFFIC

Background traffic is the traffic estimated to be on the adjacent roadways and at adjacent intersections without the proposed development’s trip generation of site-generated traffic volumes. Background traffic includes the through traffic and the traffic generated by nearby developments but assumes zero traffic generated by the site. Figure 5a shows the projected short-term (Year 2026) background traffic volumes.

The addition of new roadways, notably the future completion of Rex Road east to Eastonville Road, will greatly affect the existing traffic patterns. In lieu of a general/“blanket” growth rate, LSC has developed small-area traffic models for Meridian Ranch, Waterbury, and the Latigo Trails as part of previous work completed in the area. The results of these modeling efforts have been combined to estimate the background traffic volumes. These background traffic volumes have been based on the existing traffic volumes (from Figure 4a) plus increases in traffic due to regional growth, including buildout of the following subdivisions in the vicinity of the site:

- The existing and currently proposed subdivisions within Waterbury (located just south of the Grandview Reserve);
- Meridian Ranch Filings 1-3 and Filings 6-8;
- Meridian Ranch Estates Filings 2-3;
- Meridian Ranch Filing 11;
- Stonebridge at Meridian Ranch Filings 1, 2, and 3;
- Meridian Ranch Filing 9;
- The Vistas at Meridian Ranch Filing 1;
- WindingWalk at Meridian Ranch Filing 1;
- The Enclave at Stonebridge at Meridian Ranch;

- The Estates at Rolling Hills Ranch Filing Nos. 1 and 2;
- The Rolling Hills Ranch at Meridian Ranch PUD;
- The areas included in the Meridian Ranch 2021 Sketch Plan Amendment; and
- Latigo Trails Filing Nos. 1 and 2.

The **short-term** background traffic volumes assume Rex Road extended from its existing terminus in Meridian Ranch, across Eastonville to the first Grandview Reserve access east of Eastonville Road but **not** further east. Essentially, there would be no short-term background traffic use of this initial segment east of Eastonville – only site traffic.

Figure 5b shows the lane geometry, traffic control, and level of service at the key area intersections, based on the short-term background volumes.

2041 BACKGROUND TRAFFIC

Figure 6a shows the projected 2041 background-traffic volumes. The small-area model was also used to develop these volumes. In addition to the developments assumed to be developed by 2026, the 2041 background traffic volumes assume buildout of the Meridian Ranch development including buildout of the proposed school site located north of Falcon High School, buildout of Grandview Reserve (except trips to be generated by land uses within the Phase 1 area, as these trips are included in the "site-generated traffic."), buildout of the Waterbury developments, buildout of Latigo Trails, and buildout of the area generally north of Rex Road between Eastonville Road and US Hwy 24 with 2 ½ acre residential lots. The 2041 background-traffic scenario assumes Stapleton Drive extended west to connect with the Briargate Parkway extension and Rex Road extended east through the future phases of Grandview Reserve to US Hwy 24.

Figure 6b shows the projected 2041-background average weekday-traffic volumes on key internal street segments within Phase 1 due to the development of Phase 1 land uses plus future Grandview Reserve phases.

Figure 6c shows the lane geometry, traffic control, and level of service at the key area intersections, based on the 2041 background volumes.

TRIP GENERATION

The site-generated vehicle trips were estimated using the nationally published trip-generation rates from *Trip Generation, 11th Edition, 2021* by the Institute of Transportation Engineers (ITE). Table 3 shows the trip-generation estimates. The trip-generation estimate is based on 576 single-family homes (ITE Land Use 210 Single Family Detached Housing), a church site with a 500-seat sanctuary (ITE Land Use 560 Church) and a pre-school serving 30 students (ITE Land Use 565 Day Care Center) and the proposed "amenity center" (ITE Lane Use 496 Recreational Community Center).

The total number of vehicle trips generated by the land uses has been reduced to account for the internal vehicle trips made within the site between the single-family homes and the proposed “amenity center” without use of the external streets surrounding the site. As the “amenity center” is intended to primarily serve residents who live within Grandview Reserve, LSC assumed 75% of the trips generated by the center would travel to/from homes within the Phase 1 area. These trips were then balanced with trips to/from the residential areas. The remaining 25% of the trips anticipated to be generated by the “amenity center” were assumed to account for any employees who may live outside the development and visitors hosted by residents. To be conservative, no internal trips were assumed during the weekday for the church parcel.

Following Phase 1, Grandview Reserve is expected to generate about 5,673 new external vehicle trips on the average weekday, with about half entering and half exiting the site during a 24-hour period. During the morning peak hour of the adjacent street traffic, which occurs between 6:45 and 7:45 a.m., about 136 vehicles would enter and 328 vehicles would exit the site. During the afternoon peak hour of the adjacent street traffic, which occurs between 4:00 and 5:00 p.m., about 365 vehicles would enter and 235 vehicles would exit the site.

DIRECTIONAL DISTRIBUTION AND ASSIGNMENT

The directional distribution of the site-generated traffic volumes on the area roadways is an important factor in determining the site’s traffic impacts. Figures 7 and 8 show the short-term and long-term directional-distribution estimates for the site-generated traffic volumes, respectively. The estimates have been based on the following factors: the recent traffic-count data; the Pikes Peak Area Council of Governments’ (PPACG) 2040 traffic projections, the site’s location with respect to the nearby employment, commercial, and activity centers, and the balance of the Falcon and Colorado Springs metropolitan areas; the site’s proposed land use; the site’s proposed access points; and the phasing of the existing and future roadway system serving the site.

The short-term directional-distribution estimate assumes Rex Road has been extended from its existing terminus to the first Grandview Reserve access east of Eastonville Road but not further east. The long-term directional distribution assumes buildout of the area street network including the extension of Rex Road east to US Hwy 24 and Stapleton Drive/Briargate Parkway west to Black Forest Road.

When the distribution percentages (from Figures 7 and 8) were applied to the trip-generation estimates (from Table 3), the short-term site-generated traffic volumes on the area roadways were determined. Figure 9b shows the short-term average weekday site-generated traffic volumes on key internal street segments. Figure 10a shows the long-term site-generated traffic volumes. Figure 10b shows the long-term average weekday site-generated traffic volumes on key internal street segments.

TOTAL TRAFFIC

Figure 11a shows the projected short-term (Year 2026) total-traffic volumes. The short-term total-traffic volumes are the sum of the short-term background-traffic volumes (from Figure 5a) plus the short-term site-generated traffic volumes (from Figure 9a).

Figures 11b and 11c show the lane geometry, traffic control, and level of service at the key area intersections, based on the short-term (Year 2026) total volumes.

Figures 12a and 12b show the projected 2041 total-traffic volumes. The 2041 total-traffic volumes are the sum of the 2041 background-traffic volumes (from Figures 6a and 6b) plus the long-term site-generated traffic volumes (from Figures 10a and 10b).

Figures 12c-12e show the lane geometry, traffic control, and level of service at the key area intersections, based on the 2041 total volumes.

PROJECTED LEVELS OF SERVICE

The key area intersections and site-access points have been analyzed to determine the projected future levels of service based on the unsignalized method of analysis procedures from the *Highway Capacity Manual, 6th Edition* by the Transportation Research Board and Synchro signalized intersection procedures. Based on the criteria contained in the *ECM*, a peak-hour factor of 0.85 was used for the short-term (Year 2026) analysis, except for those intersections whose existing peak-hour factor calculated from traffic counts conducted by LSC was higher than 0.85. In those cases, the existing peak-hour factor was used. A peak-hour factor of 0.95 was used for the long-term (Year 2041). Two percent heavy vehicles were assumed for both the Year 2026 and Year 2041 analysis. The results of the analysis are contained in Figures 5b, 6b, 9b, 9c, and 12c-12e. The 2026 and 2041 level of service results are summarized in Tables 3 and 4, respectively. The level of service reports are attached.

Rex/Eastonville

The short term assumes Rex Road completed between Sunrise Ridge Drive and Eastonville Road, as well as the initial segment of Rex east of Eastonville (with this development) to the first Grandview Reserve access point east of Eastonville Road, Ivybridge Boulevard. The future four-leg intersection of Rex/Eastonville is projected to operate at LOS D or better for all movements during the peak hours as a two-way, stop-sign-controlled (TWSC) intersection, based on the projected short-term total-traffic volumes.

By 2041, it was assumed that Rex Road would be completed through the remainder of Grandview Reserve to US Highway 24.

If the intersection of Eastonville/Rex remains stop-sign controlled, by 2041 the following movements are projected to operate at LOS E or F during the morning peak hour.

- The westbound left-turn movement is projected to operate at LOS F with and without the proposed development
- The eastbound through movement is projected to operate at LOS D without the proposed development and LOS E with the proposed development.

If the intersection of Eastonville/Rex remains stop-sign controlled, by 2041 the following movements are projected to operate at LOS E or F during the afternoon peak hour.

- The westbound left-turn movement is projected to operate at LOS F with and without the proposed development.
- The eastbound left-turn movement is projected to operate at LOS F with and without the proposed development.
- The eastbound through movement is projected to operate at LOS F with and without the proposed development.

If this intersection is constructed as a one-lane modern roundabout or assuming it is eventually traffic-signal controlled, all movements are projected to operate at LOS D or better during the peak hours through 2041. If this intersection is not constructed as a one-lane roundabout, detailed analysis should be conducted at the final plat stage with each Grandview Reserve filing to determine if and when a traffic signal is warranted.

Rex Road/Ivybridge Boulevard

The intersection of Rex Road/Ivybridge Boulevard is projected to operate at LOS A for all movements based on the projected 2026 total traffic volumes and LOS C or better for all movements based on the projected 2041 total traffic volumes as a two-way, stop-sign-controlled “T” intersection. As discussed on page 2, this access to Rex Road is intended to remain a “T” intersection in perpetuity. If future access is needed for the parcels north of Rex Road, it was assumed this access would occur via a second “T” intersection east of the currently-proposed access.

Eastonville/Dawlish Drive

The intersection of Eastonville Road/Dawlish Drive is projected to operate at LOS C or better for all movements during the peak hours as a stop-sign-controlled “T” intersection, based on the short-term (Year 2026) total traffic volumes. By 2041 the westbound left-turn movement is projected to operate at LOS E during the morning peak hour based on the projected total traffic volumes. This movement is projected to operate at a satisfactory level of service based on the projected background volumes (i.e., without the proposed development). This intersection was analyzed as a modern roundabout as required. However, due to wetlands constraints, the preferred option is a conventional intersection. If this intersection were to be converted to traffic-signal control, by 2041 all movements are projected to operate at a satisfactory level of service during the peak hours.

Eastonville/Brixham Drive

The intersection of Eastonville Road/Brixham Drive is projected to operate at LOS C or better for all movements during the peak hours as a stop-sign-controlled "T" intersection, based on the short-term (Year 2026) total traffic volumes. By 2041, the westbound left-turn movement is projected to operate at LOS D during the peak hours.

Londonderry/Eastonville

The eastbound left-turn movement at the stop-sign-controlled intersection of Londonderry/Eastonville is projected to operate at LOS E during the morning peak hour and LOS C during the afternoon peak hour, based on the projected short-term (Year 2026) background traffic volumes. With the addition of the site-generated traffic, the eastbound left-turn movement is projected to operate at LOS F during the morning peak hour and LOS E during the afternoon peak hour and the eastbound right-turn movement is projected to operate at LOS F during the morning peak hour and LOS B during the afternoon peak hour.

By 2041 the eastbound left-turn is projected to operate at LOS F with or without the proposed development if this intersection remains stop-sign controlled. The eastbound right-turn movement is also projected to operate at LOS F during the morning peak hour with or without the proposed development.

The level of service at this intersection could potentially be improved if it were constructed as a channelized "T". All movements at this intersection are projected to operate at a satisfactory level of service, assuming modern roundabout or traffic-signal control.

If this intersection is not constructed as a channelized "T" or a one-lane roundabout, a signal-warrant analysis will be required as this project builds out (at the final plat stage). Warrant analysis would be used to determine if and when a traffic signal is warranted. This analysis would not be needed if a traffic signal is installed as part of the County Eastonville Road project.

Stapleton/Eastonville

The eastbound approach at the intersection of Stapleton/Eastonville is currently operating at LOS F during the morning peak hour. A PPRTA project is currently planned to improve Eastonville Road in the vicinity of the site. However, the timing of this project is unknown. It is our understanding that in the short-term, Stapleton Drive is planned to be restriped to provide eastbound and westbound left-turn lanes approaching Eastonville Road, short northbound and southbound left-turn lanes are planned to be constructed on Eastonville Road approaching Stapleton Drive, and the intersection is planned to be converted to all-way, stop-sign control. Even with these improvements it will likely be necessary to convert this intersection to traffic-signal control by 2026 to maintain an acceptable level of service.

By 2041, it was assumed that Stapleton Drive would be constructed to its full Principal Arterial cross section and the intersection of Stapleton/Eastonville would be converted to traffic-signal control. Based on the lane geometry shown in Figure 11e, this intersection is projected to operate at LOS D or better for all movements, except for the eastbound left-turn movement which is projected to operate at LOS E during the afternoon peak hour with or without the proposed development. The southbound left-turn movement is projected to operate at LOS C during the afternoon peak hour based on the projected 2041 background traffic volumes and LOS E during the afternoon peak based on the 2041 total traffic volumes. These left-turn movement have projected delays in the LOS E range simply because they arrive at the traffic signal at the beginning of the red phase at an intersection with many phases and a long cycle length. These movement would not be considered “failing” since the volume-to-capacity ratios are less than one. The justification is that to progress through traffic along an arterial corridor, the traffic-signal offsets and left-turn phase times have been adjusted to favor the through band, which can result in higher delay for the left-turn movements even though there is sufficient capacity for them.

US Hwy 24 Intersection/Stapleton

The intersection of US Hwy 24/Stapleton is currently stop-sign controlled. The northbound and southbound left-turn movements and the northbound through movements are currently operating at LOS F during the peak hours. This intersection is planned to be signalized in the (potentially near-term) future. Once signalized, all movements are projected to operate at LOS D or better during the peak hours, based on the projected short-term total traffic volumes.

By 2041, all of the left-turn movements at this intersection are projected to operate at LOS E or F during the morning and afternoon peak hours with or without the proposed development. To maintain an overall LOS D or better as a “conventional” four-leg signalized intersection, it may be necessary to provide three approach through lanes in all directions. Alternate traffic-control options were presented in the US Hwy 24 PEL Study. Alternatives to a “conventional” four-leg signalized intersection may include a jug-handle intersection, a continuous-flow intersection (or partial/half CFI), or a junior interchange. An alternate intersection design may be needed long term to maintain an acceptable level of service.

US Hwy 24/Rex

The intersection of US 24/Rex is not planned to be constructed as part of Phase 1. By 2041, it was assumed that Rex Road would be constructed from Eastonville to US Hwy 24 and that intersection with US Hwy 24 would be constructed as a signal-controlled, channelized “T” intersection. All movements are projected to operate at LOS D, based on the projected 2041 total traffic volumes.

QUEUING ANALYSIS

A queuing analysis was performed using Synchro/SimTraffic for Rex Road between Eastonville and a potential future access point for Four-Way Ranch. The 2041-total morning and afternoon peak-hour traffic volumes were entered into the Synchro model. Each simulation was run five times and the results were averaged. The SimTraffic queuing reports are attached.

The projected maximum westbound left-turn queue on Rex Road approaching Eastonville Road is 251 feet during the morning peak hour and 159 feet during the afternoon peak hour. As shown in Figure 2, the proposed spacing between Eastonville Road and the first Grandview Reserve access point is 576 feet (centerline to centerline). This access point is intended to remain a “T” intersection in perpetuity. If future access is needed for the parcels north of Rex Road, it was assumed this access would occur via a second “T” intersection east of the currently proposed access.

The projected maximum westbound left-turn queue on Rex Road approaching the first Grandview Reserve access point (Road “V”) is about 36 feet during the morning peak hour and about 102 feet during the afternoon peak hour. The projected maximum eastbound left-turn queue on Rex Road approaching the potential future access point for Four Way Ranch is about 12 feet during the afternoon peak hour and about 18 feet during the afternoon peak hour.

FUNCTIONAL CLASSIFICATIONS AND LANEAGE

Figure 13 shows the recommended functional classifications for internal streets within Phase 1 and for the roadways in the vicinity of the site. The functional classifications for the major transportation corridors in the vicinity and number of through lanes are consistent with the current El Paso County *MTCP* and the Grandview Reserve Sketch Plan TIS report.

The projected average daily traffic on Eastonville Road south of Brixham Drive is 7,055 vehicles per day (vpd) based on the projected short-term (Year 2026) total traffic and 14,645 vpd based on the projected 2041 total traffic volumes. The projected daily traffic volumes on this section of Eastonville Road are below the design ADT of 20,000 vpd for an Urban Minor Arterial given in Table 2-6 of the El Paso County Engineering Criteria Manual (*ECM*).

The projected average daily traffic on Rex Road just east of Eastonville Road is 665 vpd based on the projected short-term (Year 2026) total traffic and 11,240 vpd based on the projected 2041 total traffic volumes. The projected daily traffic volumes on this section of Rex Road are below the design ADT of 20,000 vpd for an Urban Minor Arterial given in Table 2-6 of the *ECM*.

The projected average daily traffic volumes on Ivybridge Drive just south of Rex Road is 665 vpd based on the projected short-term (Year 2026) total traffic volumes and 2,650 vpd based on the projected 2041 total traffic volumes. The projected daily traffic volumes on Ivybridge Boulevard are below the design ADT of 10,000 vpd for an Urban Residential Collector given in Table 2-6 of the *ECM*.

The projected average daily traffic volumes on Dawlish Drive between Eastonville Road and Zelda Street is 3,970 vehicles per day (vpd) based on the projected short-term (Year 2026) total traffic volumes and 2,840 vpd based on the projected 2041 total traffic volumes. The projected daily traffic volumes on this section of Dawlish Drive are below the design ADT of 10,000 vpd for an Urban Residential Collector given in Table 2-6 of the *ECM*.

The projected average daily traffic volumes on Dawlish Drive between Zelda Street and Ivybridge Boulevard is between 315 and 1,965 vpd based on the projected short-term (Year 2026) total traffic and between 1,185 vpd and 1,525 vpd based on the projected 2041 total traffic volumes. The projected daily traffic volumes on this section of Dawlish Drive are below the design ADT of 3,000 vpd for an Urban Local given in Table 2-6 of the *ECM*.

The projected average daily traffic volumes on Brixham Drive just east of Eastonville Road is 1,095 vpd based on the projected short-term (Year 2026) total traffic volumes and 1,370 vpd based on the projected 2041 total traffic volumes. The projected daily traffic volumes on this Brixham Drive are below the design ADT of 3,000 vpd for an Urban Local given in Table 2-6 of the *ECM*.

The projected average daily traffic on Zelda Street just east of Dawlish Drive is 2,010 vpd based on the projected short-term (Year 2026) total traffic and 1,675 vpd based on the projected 2041 total traffic volumes. The projected daily traffic volumes on this Zelda Street are below the design ADT of 3,000 vpd for an Urban Local given in Table 2-6 of the *ECM*.

The three cul-de-sacs (Tintagel Trail, Primley Woods Path and St. Ives Way) on the north end of Dawlish Drive are projected to have average daily traffic volumes below 300 vpd and could be classified as Urban Local (Low-Volume). All of the other internal streets within Grandview Reserve Phase 1 are projected to have average daily traffic volumes below the 3,000 vehicle per day threshold for Urban Local streets.

MULTI-MODAL AND PEDESTRIAN/BIKE TRANSPORTATION

- A park n' ride facility is planned for a site near Meridian Road and US Hwy 24.
- The Rock Island Regional Trail passes adjacent to the site.
- Many of the area County roads have been or will be upgraded to provide paved shoulders for cyclists. Stapleton and Elbert Road are shown as future "bike routes."
- The *MTCP* shows a future primary regional trail along Eastonville Road. Another future primary regional trail is shown extending west from Eastonville Road though Meridian Ranch.
- The US Hwy 24 PEL study also includes multi-modal elements.
- All of the internal streets within Grandview Reserve Phase 1 will have sidewalks that will connect to Rex Road and/or Eastonville Road. The proposed trail system shown in Figure 2 will also connect to the future Waterbury development to the south in addition to connections to Rex Road and Eastonville Road.

TRANSPORTATION IMPROVEMENT FEE PROGRAM

Project Fees

This project will be required to participate in the El Paso County Road Improvement Fee Program. Grandview Reserve will join the ten-mil PID. The ten-mil PID building-permit fee portion associated with this option is $1,221 per single-family dwelling unit. The total building-permit fee would be $689,865 for the 565 lots within Phase 1. It is likely that this amount would be paid incrementally with building permits associated with several individual final-plat applications.

Potentially Reimbursable Improvements Under the MTCP Fee Program

Nearby improvement projects potentially reimbursable under the Fee Program are (From MTCP Map No. 13):

- MTCP Project No. U19: Eastonville Road
- MTCP Project No. N4: Rex Road (extended between Eastonville & US Highway 24)
- MTCP Project No C12: Stapleton Road
- Also, potentially intersection improvements and traffic signals/roundabouts at major MTCP roadway intersections per fee program guidelines
- Also, potentially intersection improvements and traffic signals (or CDOT traffic signal escrows)/roundabouts at US 24 intersections with Rex Road and/or Stapleton Road per fee program guidelines

ROADWAY IMPROVEMENTS

The attached Table 5 presents the Phase 1 recommended roadway improvements.

- Based on the 2041 total-traffic volumes shown in Figure 12a and the criteria contained in the El Paso County *Engineering Criteria Manual* (*ECM*), a westbound left-turn lane will be required on Rex Road approaching Eastonville Road. This lane should be 350 feet long plus a 100-foot taper. This improvement would not be needed if the intersection is constructed as a modern roundabout.
- Based on the 2041 total-traffic volumes shown in Figure 12a and the criteria contained in the *ECM*, a westbound right-turn deceleration lane will be required on Rex Road approaching Eastonville Road. Based on the *ECM* criteria, this lane should be 155 feet long plus a 160-foot taper. This improvement would not be needed if the intersection is constructed as a modern roundabout.
- Based on the 2041 total-traffic volumes shown in Figure 12a and the criteria contained in the *ECM*, an eastbound right-turn deceleration lane will be required on Rex Road approaching Ivybridge Boulevard. Based on the *ECM* criteria, this lane should be 155 feet long plus a 160-foot taper.
- Based on the 2041 total traffic volumes shown in Figure 12a and the criteria contained in the *ECM*, a southbound left-turn lanes will **not** be required on Eastonville Road

approaching Dawlish. However, LSC recommends a left-turn lane be provided at this intersection. This section of Eastonville Road was included in the *Eastonville Road Project Conceptual Design Repor*t by Wilson & Company, dated April 2021. The proposed cross section includes a left-turn lane in the center median.

- Based on the 2041 total traffic volumes shown in Figure 12a and the criteria contained in the *ECM*, a southbound left-turn lane will be required on Eastonville Road approaching Brixham. This section of Eastonville Road was included in the *Eastonville Road Project Conceptual Design Repor*t by Wilson & Company, dated April 2021. The proposed cross section includes a left-turn lane in the center median.
- Based on the short-term (Year 2026) total traffic volumes shown in Figure 11a and the criteria contained in the *ECM*, northbound right-turn deceleration lanes will be required on Eastonville Road approaching Dawlish Drive and Brixham Drive). Based on the *ECM* criteria, these lanes should be 155 feet long plus a 160-foot taper.
- Based on the short-term (Year 2026) total traffic volumes shown in Figure 11a and the criteria contained in the *ECM*, a northbound left-turn lane will be required on Ivybridge Boulevard approaching Rex Road. This lane should be 225~~155~~ feet long plus a 75~~90~~-foot reverse curve taper.
- Based on the 2041 total traffic volumes shown in Figure 12b and the criteria contained in the *ECM*, a northbound left-turn lane will **not** be required on Ivybridge Boulevard approaching the full-movement church access. However, LSC recommends 155 feet long plus a 160-foot taper be constructed at this location.
- Based on the 2041 total traffic volumes shown in Figure 12b and the criteria contained in the *ECM*, a southbound right-turn deceleration lane will be required on Ivybridge Boulevard approaching the full-movement church access. This lane should be 155 feet long plus a 90-foot reverse-curve taper. A southbound right-turn deceleration lane is not projected to be required approaching the right-in/right-out church access.
- Based on the 2041 total traffic volumes shown in Figure 12b and the criteria contained in the *ECM*, a southbound left-turn lane will be required on Ivybridge Boulevard approaching Dawlish Drive. This lane should be 155 feet long plus a 160-foot taper. As this is planned to be a T-intersection, a separate right-turn lane could be provided instead.

* * * * *

Please contact me if you have any questions or need further assistance.

Sincerely,

LSC TRANSPORTATION CONSULTANTS, INC.

By: Jeffrey C. Hodsdon, P.E.
Principal

JCH/KDF:jas

Enclosures**:** Tables 2-5
Figures 1-13
Appendix Table 1
MTCP Maps
Map 15 Bicycle and Pedestrian Network Improvements
Traffic Count Reports
Crash History Data
Level of Service Reports
Queuing Reports

Tables

TRANSPORTATION
CONSULTANTS, INC.

Table 2
Trip Generation Estimate
Grandview Reserve Phase 1 Preliminary Plan

Land Use Code	Land Use Description	Trip Generation Units	Trip Generation Rates [1] Average Weekday Traffic	Morning Peak Hour In	Morning Peak Hour Out	Afternoon Peak Hour In	Afternoon Peak Hour Out	Total Trips Generated Average Weekday Traffic	Morning Peak Hour In	Morning Peak Hour Out	Afternoon Peak Hour In	Afternoon Peak Hour Out	Internal Trips (%)	Internal Trips Average Weekday Traffic	Morning Peak Hour In	Morning Peak Hour Out	Afternoon Peak Hour In	Afternoon Peak Hour Out	External Trips Generated Average Weekday Traffic	Morning Peak Hour In	Morning Peak Hour Out	Afternoon Peak Hour In	Afternoon Peak Hour Out
560	Church	500 seats	0.90	0.04	0.03	0.05	0.06	450	21	14	23	28	0%	0	0	0	0	0	450	21	14	23	28
565	Day Care Center	30 Students	5.13	0.50	0.44	0.40	0.46	154	15	13	12	14	0%	0	0	0	0	0	154	15	13	12	14
495	Recreational Community Center	3 KSF	29.91	1.26	0.65	3.44	3.88	90	4	2	10	12	75%	68	3	2	8	9	22	1	0	2	3
210	Single-Family Detached Housing	565 DU[2]	9.05	0.18	0.54	0.60	0.35	5,115	101	304	337	198	1%	68	2	3	9	8	5,047	99	301	328	190
								5,809	**141**	**333**	**382**	**252**		**136**	**5**	**5**	**17**	**17**	**5,673**	**136**	**328**	**365**	**235**

Notes:
(1) Source: "Trip Generation, 11th Edition, 2021" by the Institute of Transportation Engineers (ITE).
The trip generation rates shown were calculated using on the fitted curve equations. The morning and afternoon peak hour rates shown are for the peak hour of adjacent street traffic.
(2) DU = dwelling unit

Source: LSC Transportation Consultants, Inc.

May-22

Table 3
2026 Level of Service Analysis
Grandview Reserve Phase 1

Intersection	Traffic Control	Movement	Existing Traffic AM	Existing Traffic PM	2026 Background Traffic AM	2026 Background Traffic PM	2026 Total Traffic AM	2026 Total Traffic PM
#1 Rex/Eastonville	TWSC	Northbound Left	- - -	- - -	A	A	A	A
		Eastbound Left	- - -	- - -	B	C	B	C
		Eastbound Through	- - -	- - -	- - -	- - -	B	C
		Eastbound Right	- - -	- - -	B	A	B	A
		Westbound Left	- - -	- - -	- - -	- - -	C	D
		Westbound Through/Right	- - -	- - -	- - -	- - -	B	C
		Southbound Left	- - -	- - -	- - -	- - -	A	A
#2 Rex/Ivybridge	TWSC	Northbound Left	- - -	- - -	- - -	- - -	A	A
#10 Eastonville/Dawlish	TWSC	Westbound Left	- - -	- - -	- - -	- - -	C	C
		Westbound Right	- - -	- - -	- - -	- - -	A	B
		Southbound Left	- - -	- - -	- - -	- - -	A	A
#11 Eastonville/Birxham	TWSC	Westbound Left	- - -	- - -	- - -	- - -	C	C
		Westbound Right	- - -	- - -	- - -	- - -	A	B
		Southbound Left	- - -	- - -	- - -	- - -	A	A
#12 Eastonville/Londonderry	TWSC	Northbound Approach	A	A	B	A	C	B
		Eastbound Left	D	B	**E**	C	**F**	**E**
		Eastbound Right	B	A	D	B	**F**	B
#13 Eastonville/Stapleton	TWSC	Northbound Approach	A	A	- - -	- - -	- - -	- - -
		Eastbound Approach	**F**	C	- - -	- - -	- - -	- - -
		Westbound Left/Through	**F**	C	- - -	- - -	- - -	- - -
		Westbound Right	B	A	- - -	- - -	- - -	- - -
		Southbound Approach	A	A	- - -	- - -	- - -	- - -
	AWSC	Northbound Left	- - -	- - -	C	B	D	C
		Northbound Right	- - -	- - -	**F**	**F**	**F**	**F**
		Eastbound Left	- - -	- - -	B	B	C	C
		Eastbound Through/Right	- - -	- - -	**E**	C	**F**	**E**
		Westbound Left	- - -	- - -	B	B	C	C
		Westbound Through/Right	- - -	- - -	**F**	**F**	**F**	**F**
		Southbound Left	- - -	- - -	**F**	C	- - -	- - -
		Southbound Through/Right	- - -	- - -	**F**	C	**F**	**F**
		Southbound Through	- - -	- - -	- - -	- - -	**F**	**E**
		Southbound Right	- - -	- - -	- - -	- - -	C	C
	Signal	Eastbound Left	- - -	- - -	- - -	- - -	B	B
		Eastbound Through/Right	- - -	- - -	- - -	- - -	C	C
		Westbound Left	- - -	- - -	- - -	- - -	B	B
		Westbound Through	- - -	- - -	- - -	- - -	C	C
		Westbound Right	- - -	- - -	- - -	- - -	A	B
		Northbound Left	- - -	- - -	- - -	- - -	B	B
		Northbound Through/Right	- - -	- - -	- - -	- - -	D	D
		Southbound Left	- - -	- - -	- - -	- - -	D	D
		Southbound Through	- - -	- - -	- - -	- - -	C	C
		Southbound Right	- - -	- - -	- - -	- - -	A	A
		Overall	- - -	- - -	- - -	- - -	**C**	**C**
#14 US 24/Stapleton	TWSC	Eastbound Left	A	A	B	B	B	B
		Eastbound Through	**F**	**F**	**F**	**F**	**F**	**F**
		Eastbound Right	**F**	**F**	**F**	**F**	**F**	**F**
		Westbound Left	B	B	**F**	C	**F**	C
		Westbound Through	**F**	**F**	**F**	**F**	**F**	**F**
		Westbound Right	**E**	**E**	**F**	**F**	**F**	**F**
		Northbound Left	A	A	B	B	B	B
		Southbound Left	A	A	A	A	A	A
	Signal	Eastbound Left	- - -	- - -	- - -	- - -	D	D
		Eastbound Through	- - -	- - -	- - -	- - -	D	D
		Eastbound Right	- - -	- - -	- - -	- - -	A	A
		Westbound Left	- - -	- - -	- - -	- - -	C	C
		Westbound Through	- - -	- - -	- - -	- - -	D	D
		Westbound Right	- - -	- - -	- - -	- - -	A	A
		Northbound Left	- - -	- - -	- - -	- - -	B	D
		Northbound Through	- - -	- - -	- - -	- - -	B	B
		Northbound Right	- - -	- - -	- - -	- - -	A	A
		Southbound Left	- - -	- - -	- - -	- - -	A	A
		Southbound Through	- - -	- - -	- - -	- - -	C	C
		Southbound Right	- - -	- - -	- - -	- - -	A	A
		Overall	- - -	- - -	- - -	- - -	**C**	**C**

Source: LSC Transportation Consultants, Inc. Mar-22

Table 4
Page 1 of 2
2041 Level of Service Analysis
Grandview Reserve Phase 1

Intersection	Traffic Control	Movement	2041 Background Traffic AM	2041 Background Traffic PM	2041 Total Traffic AM	2041 Total Traffic PM
#1 Rex/Eastonville	TWSC	Northbound Left	A	A	A	A
		Eastbound Left	D	F	D	F
		Eastbound Through	D	F	E	F
		Eastbound Right	B	A	B	A
		Westbound Left	F	F	F	F
		Westbound Through	C	D	C	D
		Westbound Right	A	A	A	A
		Southbound Left	A	A	A	A
	Roundabout	Eastbound Left/Through/Right	B	A	C	B
		Westbound Left/Through/Right	B	B	B	B
		Northbound Left/Through/Right	A	C	A	C
		Southbound Left/Through/Right	B	A	B	A
		Overall	**B**	**C**	**B**	**C**
						A
	Signal	Eastbound Left	B	B	B	B
		Eastbound Through	C	C	C	C
		Eastbound Right	A	A	A	A
		Westbound Left	C	B	C	B
		Westbound Through	B	C	B	C
		Westbound Right	A	A	A	A
		Northbound Left	B	B	B	B
		Northbound Through	C	C	C	C
		Northbound Right	A	A	A	A
		Southbound Left	B	B	B	B
		Southbound Through	C	C	C	C
		Southbound Right	A	A	A	A
		Overall	**B**	**B**	**B**	**B**
#2 Rex/Ivybridge	TWSC	Northbound Left	C	C	C	C
		Northbound Right	B	B	B	C
		Westbound Left	A	A	A	B
	Roundabout	Eastbound Through/Right	A	A	A	B
		Westbound Left/Through	A	A	A	B
		Northbound Left/Right	A	A	A	C
		Overall	**A**	**A**	**A**	**A**
#3 Rex/Future Access	TWSC	Eastbound Left	A	A	A	A
		Southbound Approach	C	C	C	C
#9 Rex/US 24	Signal	Eastbound Left	D	D	D	D
		Eastbound Right	A	A	A	A
		Northbound Left (2)	D	D	D	D
		Northbound Through (2)	FREE	FREE	FREE	FREE
		Southbound Through (2)	B	C	B	C
		Southbound Right	A	A	A	A
		Overall	**B**	**C**	**B**	**C**
#10 Eastonville/Dawlish	TWSC	Westbound Left	C	C	E	D
		Westbound Right	A	A	B	B
		Southbound Left	A	A	A	B
	Roundabout	Westbound Left/Right	A	A	A	A
		Northbound Through/Right	A	A	A	B
		Southbound Left/Through	B	A	B	A
		Overall	**A**	**A**	**B**	**B**
	Signal	Westbound Left	- - -	- - -	D	D
		Westbound Right	- - -	- - -	B	B
		Northbound Through	- - -	- - -	A	A
		Northbound Right	- - -	- - -	A	A
		Southbound Left	- - -	- - -	A	A
		Southbound Through	- - -	- - -	B	A
		Overall	- - -	- - -	**B**	**A**
#11 Eastonville/Birxham	TWSC	Westbound Left	A	A	D	D
		Westbound Right	B	C	B	C
		Southbound Left	A	B	A	B
	Roundabout	Westbound Left/Right	A	A	A	B
		Northbound Through/Right	A	B	A	D
		Southbound Left/Through	B	A	D	A
		Overall	**B**	**B**	**C**	**C**

Source: LSC Transportation Consultants, Inc.

May-22

Table 4
Page 2 of 2
2041 Level of Service Analysis
Grandview Reserve

Intersection	Traffic Control	Movement	2041 Background Traffic AM	2041 Background Traffic PM	2041 Total Traffic AM	2041 Total Traffic PM
#12 Eastonville/Londonderry	TWSC	Northbound Left	C	B	C	B
		Eastbound Left	F	F	F	F
		Eastbound Right	F	B	F	C
	Roundabout	Eastbound Left	A	A	A	A
		Eastbound Right	B	A	C	A
		Northbound Left	A	A	A	A
		Northbound Through	A	B	A	C
		Southbound Through	B	A	B	A
		Southbound Through/Right	A	A	B	A
		Overall	**A**	**A**	**B**	**B**
	Signal	Eastbound Left	D	C	D	D
		Eastbound Right	B	A	B	A
		Northbound Left	C	B	D	C
		Northbound Through (2)	A	A	A	B
		Southbound Through (2)	C	C	D	C
		Southbound Right	A	A	A	A
		Overall	**B**	**B**	**D**	**B**
#13 Eastonville/Stapleton	Signal	Eastbound Left	D	E	D	E
		Eastbound Through (2)	D	C	D	D
		Eastbound Right	A	A	A	A
		Westbound Left	C	C	D	C
		Westbound Through (2)	D	D	D	D
		Westbound Right	A	A	A	B
		Northbound Left	C	C	C	C
		Northbound Through (1)	C	D	C	D
		Northbound Right	A	A	A	A
		Southbound Left	B	C	B	E
		Southbound Through (1)	D	C	D	C
		Southbound Right	A	A	A	A
		Overall	**C**	**C**	**C**	**D**
#14 US 24/Stapleton	Signal	Eastbound Left (2)	E	F	E	F
		Eastbound Through (2)	D	D	D	D
		Eastbound Right	A	A	A	A
		Westbound Left (2)	E	E	E	E
		Westbound Through (2)	E	D	D	D
		Westbound Right	A	A	A	A
		Northbound Left (2)	E	E	E	E
		Northbound Through (2)	C	D	C	D
		Northbound Right	A	A	A	A
		Southbound Left (2)	E	E	E	E
		Southbound Through (2)	C	C	D	D
		Southbound Right	A	A	A	A
		Overall	**C**	**D**	**C**	**D**
Ivybridge/ North Church Access	TWSC	Northbound Left	- - -	- - -	A	A
		Eastbound Approach	- - -	- - -	A	B
Ivybridge/ South Church Access (RIRO)	TWSC	Eastbound Right	- - -	- - -	A	A
Ivybridge/Dawlish	TWSC	Eastbound Approach	- - -	- - -	A	A
		Southbound Left	- - -	- - -	B	B
		Southbound Right	- - -	- - -	A	A

Source: LSC Transportation Consultants, Inc. May-22

Table 5
Grandview Reserve Phase 1
Roadway Improvements

Item #	Improvement	Trigger	Timing	Responsibility
	Roadway Segment Improvements			
1	Eastonville - Stapleton to Londonderry final grading and paving	dependent on PPRTA funding priorities	TBD by EPC; PPRTA "A-List" Project	PPRTA
2	Eastonville - Londonderry to Rex final grading and paving	With Grandview Reserve development	With Grandview Reserve Phase 1	Grandview Reserve if development preceeds Eastonville Road construction by EPC
3	Falcon Regional Trail east of Eastonville Road along the site frontage	With Grandview Reserve development	With Grandview Reserve Phase 1	Grandview Reserve if development preceeds Eastonville Road construction by EPC
4	Eastonville - Rex to Latigo initial grading and paving	average daily traffic > 300 vehicles per day	TBD by EPC; PPRTA "A-List" Project	PPRTA or developers
5	Eastonville - Rex to Latigo upgrade to Rural Minor Arterial (per MTCP)	dependent on PPRTA funding priorities	TBD by EPC	PPRTA
6	Eastonville - Stapleton to Grandview Reserve south boundary upgrade to 4-Lane Rural Minor Arterial (per MTCP)	average daily traffic > 20,000 vehicles per day	dependent on PPRTA funding priorities	PPRTA
7	Construct Rex from Eastonville to first access point east of Eastonville Road	With Grandview Reserve development	With Grandview Reserve Phase 1	Grandview Reserve
8	Construct Rex from first access point east of Eastonville Road to US Hwy 24 Adequate right-of-way should be reserved to allow for the construction of left-turn and right-turn deceleration lanes at all potential future access points	With Grandview Reserve development	With future Grandview Reserve filings	Grandview Reserve
9	Construct Rex from Sunrise Ridge to Eastonville	With adjacent Meridian Ranch development	With future Meridian Ranch filings	Meridian Ranch
10	Stapleton Drive - US Hwy 24 to Eastonville Road complete southern (eastbound) half	average daily traffic > 18,000 vehicles per day	Shown in 2040 MTCP	El Paso County west of Eastonville Road; Waterbury Metro District east of Eastonville Road.
	Eastonville/Stapleton			
11	Construct northbound and southbound left-turn lanes on Eastonville Rd. approaching Stapleton Dr.	- - -	Short-Term	PPRTA/El Paso County(1)
12	Signalization of the intersection of Stapleton/Eastonville.	Once warrants are met. The decision on timing of traffic signal installation rests with El Paso County Public Works.	anticipated in the short-term	eligible intersection under the fee impact program
	Eastonville/Rex Intersection			
	Note regarding a potential roundabout intersection instead of conventional intersection: Planning and preliminary design considerations for Eastonville Road Between Stapleton and Rex are currently in-process. The concept of roundabout traffic control is being considered as an option for some of the intersections in the corridor.			
13	Construct a northbound right-turn deceleration lane on Eastonville approaching Rex Road (not needed if constructed as a modern roundabout)	northbound right-turn volume > 50 vph	With Grandview Reserve Phase 1	Grandview Reserve
14	Construct a southbound left-turn deceleration lane on Eastonville approaching Rex Road (not needed if constructed as a modern roundabout)	southbound left-turn volume > 25 vph	With Grandview Reserve Filing 1	Potentially included as part of the PPRTA design of Eastonville Road OR Grandview Reserve
15	Construct a westbound left-turn deceleration lane on Rex Road approaching Eastonville Road (not needed if constructed as a modern roundabout)	westbound left-turn volume > 25 vph	With Grandview Reserve Filing 1	Grandview Reserve
16	Construct a westbound right-turn deceleration lane on Rex Road approaching Eastonville Road (not needed if constructed as a modern roundabout)	westbound right-turn volume > 50 vph	With Grandview Reserve Filing 1	Grandview Reserve
17	Convert to traffic signal control (not needed if constructed as a modern roundabout)	Once warrants are met. The decision on timing of traffic signal installation rests with El Paso County Public Works.	With Grandview Reserve Filing 1	likely to be considered an "eligible intersection" under the roadway improvement fee program
	Rex/Ivybridge			
18	Construct an eastbound right-turn deceleration lane on Rex Road approaching Ivybridge	eastbound right-turn volume > 50 vph	With the future extension of Rex Road east of this intersection	Grandview Reserve
19	Construct a westbound left-turn deceleration lane on Rex Road approaching Ivybridge	westbound left-turn volume > 25 vph	With the future extension of Rex Road east of this intersection	Grandview Reserve
	Eastonville/Dawlish			
20	Construct a northbound right-turn deceleration lane on Eastonville approaching Dawlish (Not needed if constructed as a modern roundabout. Intersection control is to be determined with the final plat)	northbound right-turn volume > 50 vph	With Grandview Reserve Phase 1	Grandview Reserve
21	Construct a southbound left-turn deceleration lane on Eastonville approaching Dawlish (Not needed if constructed as a modern roundabout. Intersection control is to be determined with the final plat)	southbound left-turn volume > 25 vph	With Grandview Reserve Phase 1	Potentially included as part of the PPRTA design of Eastonville Road OR Grandview Reserve
	Eastonville/Brixham			
22	Construct a northbound right-turn deceleration lane on Eastonville approaching Brixham (Not needed if constructed as a modern roundabout. Intersection control is to be determined with the final plat)	northbound right-turn volume > 50 vph	With Grandview Reserve Phase 1	Grandview Reserve
23	Construct a southbound left-turn deceleration lane on Eastonville approaching Brixham (Not needed if constructed as a modern roundabout. Intersection control is to be determined with the final plat)	southbound left-turn volume > 25 vph	With Grandview Reserve Phase 1	Potentially included as part of the PPRTA design of Eastonville Road OR Grandview Reserve
	Ivybridge/Full-Movement Church Access			
24	Construct a southbound right-turn deceleration lane on Ivybridge approaching the full-movement church access	southbound right-turn volume > 50 vph	With development of the church parcel	Grandview Reserve
25	Construct a northbound left-turn deceleration lane on Ivybridge approaching the full-movement church access	northbound left-turn volume > 25 vph	With development of the church parcel	Grandview Reserve
	Ivybridge/Right-In/Right-Out Church Access			
26	Southbound right-turn deceleration lane on Ivybridge approaching the right-in/right-out church access	southbound right-turn volume > 50 vph	NOT ANTICIPATED TO BE REQUIRED	
	Ivybridge/Dawlish			
27	Southbound right-turn deceleration lane on Ivybridge approaching Dawlish	southbound right-turn volume > 50 vph	With Grandview Reserve Phase 1	Grandview Reserve

Notes:

(1) LSC anticipates that these turn lanes will be included in the project design. The project will be constructed by El Paso County as PPRTA project.

Source: LSC Transportation Consultants, Inc. (May 2022)

Figures

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CONSULTANTS, INC.

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Figure 1

Vicinity Map

Grandview Reserve Phase 1 (LSC #S214240)

Figure 2a

Site Plan

Grandview Reserve Phase 1 (LSC #S214240)

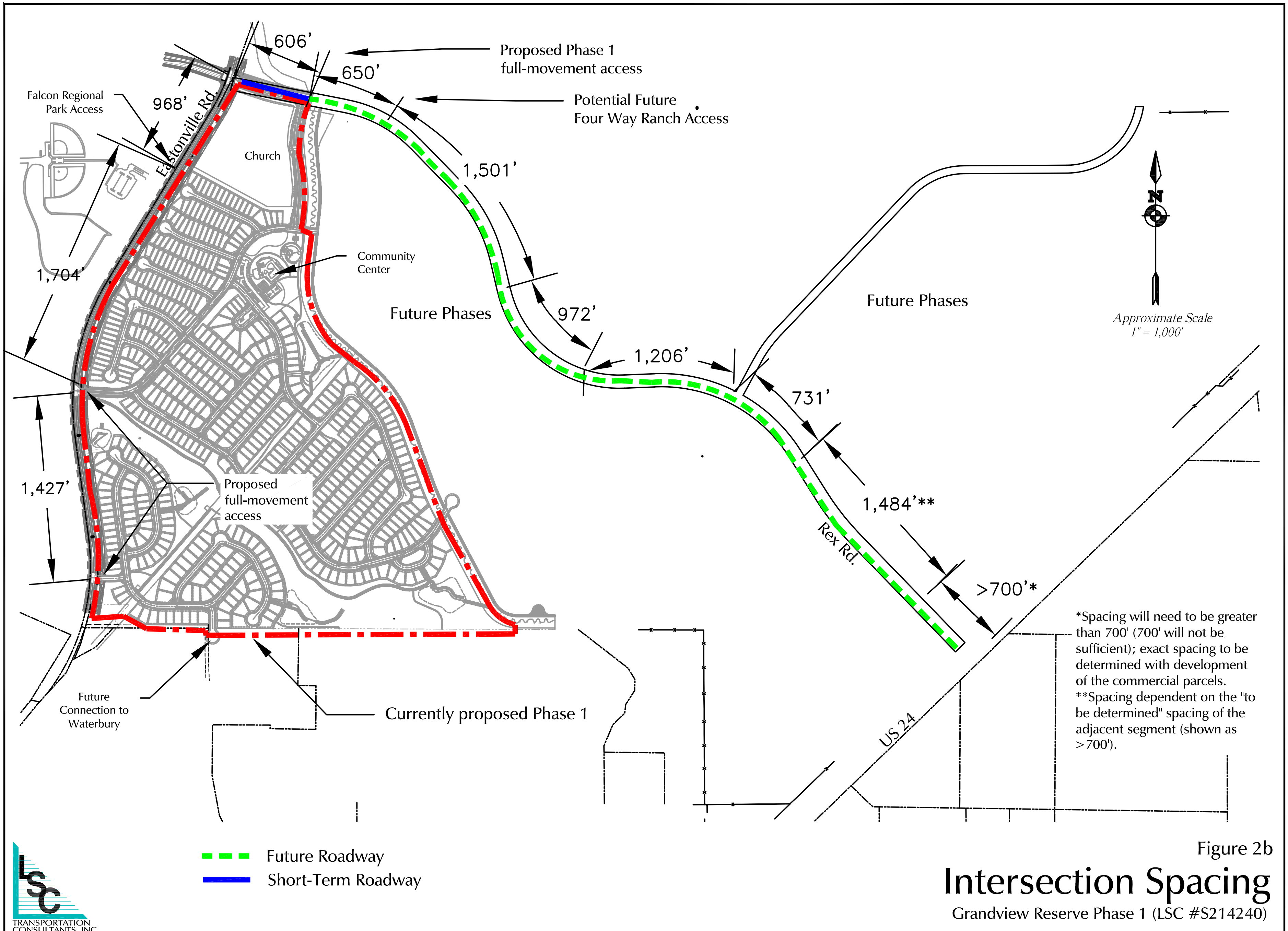


Figure 2b

Intersection Spacing

Grandview Reserve Phase 1 (LSC #S214240)

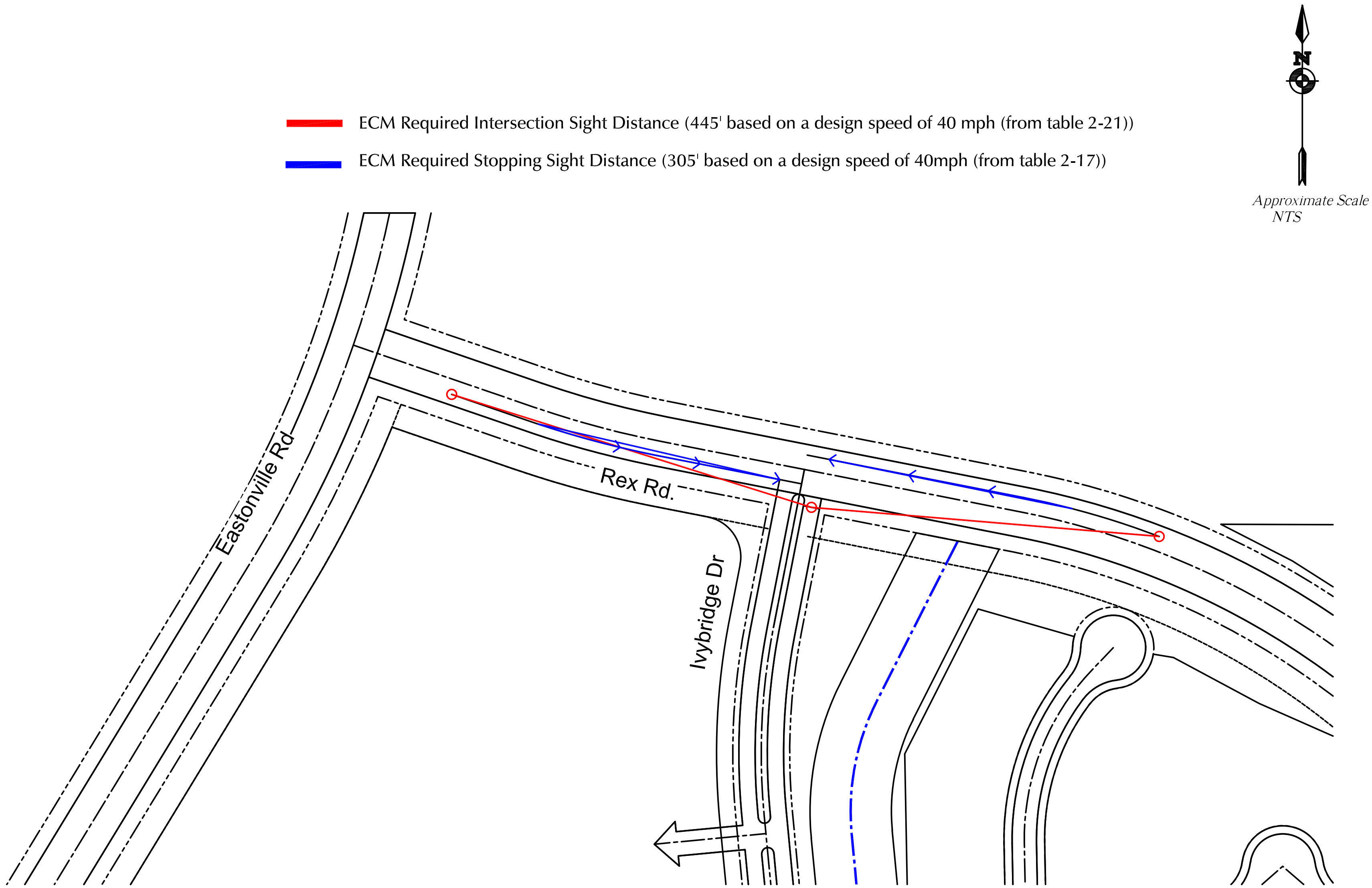


Figure 3a

Sight Distance Analysis
Rex Rd/Ivybridge Dr

Grandview Reserve Phase 1 (LSC #S214240)

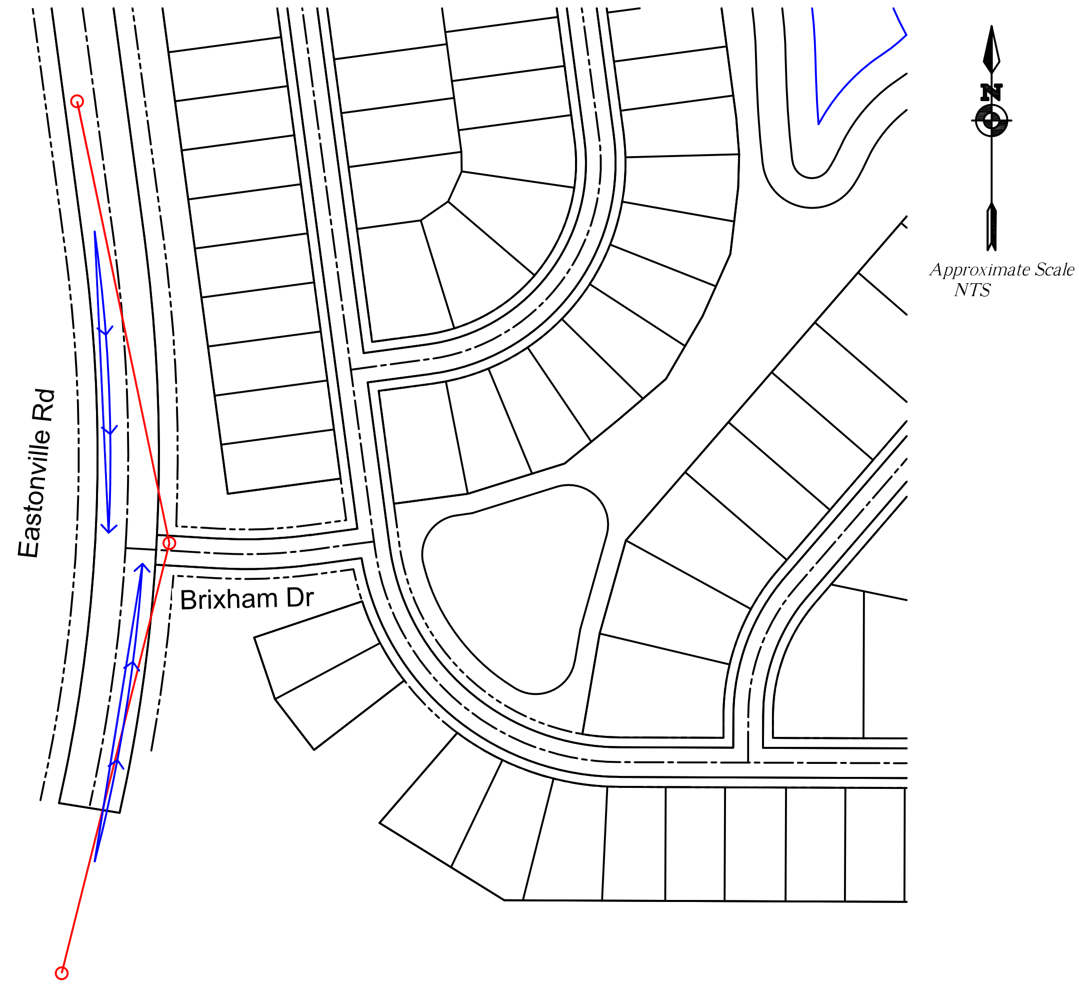
LSC TRANSPORTATION CONSULTANTS, INC.

Figure 3b

Sight Distance Analysis
Dawlish Dr/Eastonville Rd

Grandview Reserve Phase 1 (LSC #S214240)

LSC TRANSPORTATION CONSULTANTS, INC.



ECM Required Intersection Sight Distance
(445' based on a design speed of 40 mph (from table 2-21))

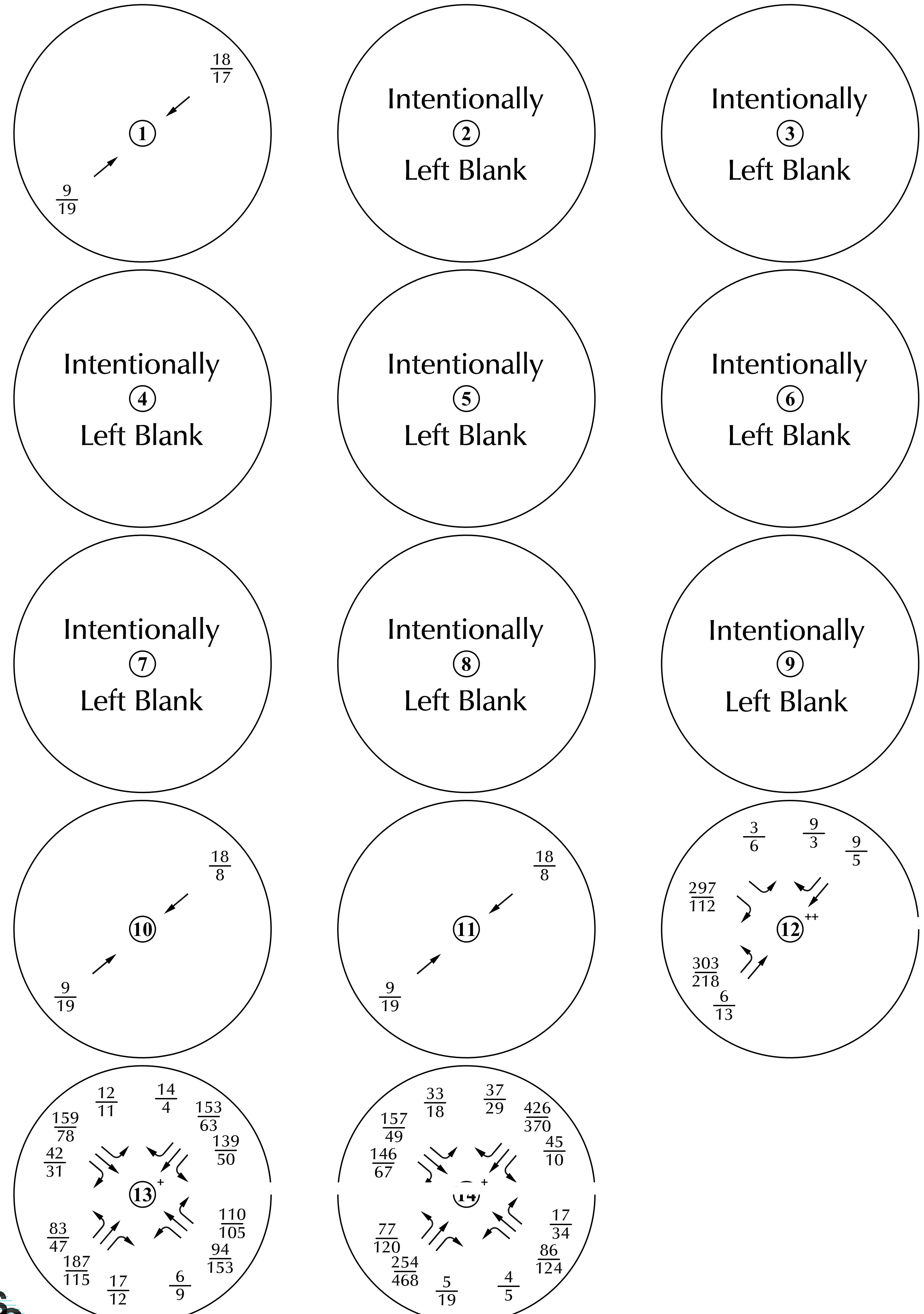
ECM Required Stopping Sight Distance
(305' based on a design speed of 40mph (from table 2-17))

TRANSPORTATION CONSULTANTS, INC.

Figure 3c

Sight Distance Analysis
Brixham Dr/Eastonville Rd

Grandview Reserve Phase 1 (LSC #S214240)



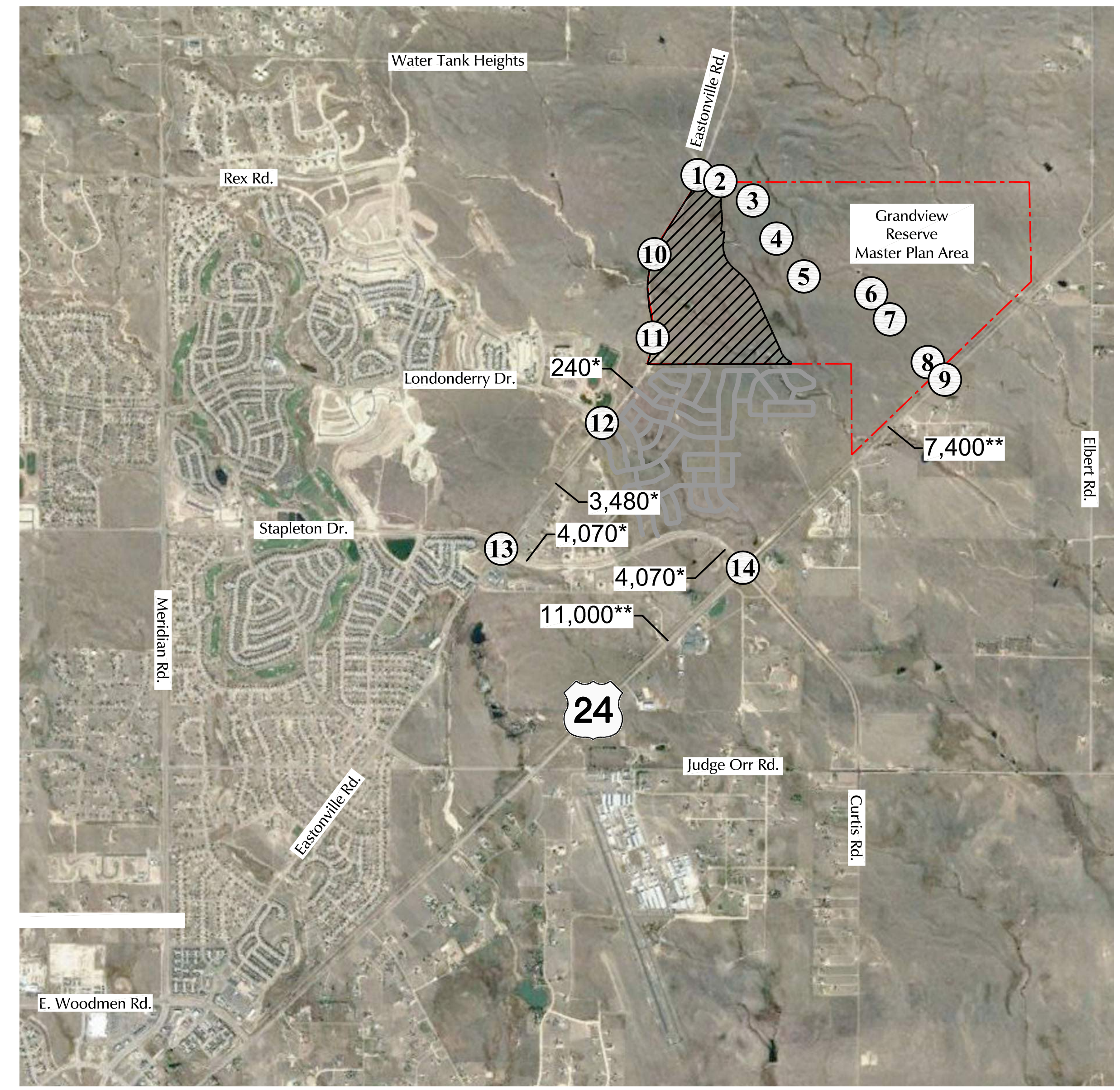
LEGEND:

XX/XX = AM Weekday Peak-Hour Traffic (vehicles per hour) / PM Weekday Peak-Hour Traffic (vehicles per hour)

X,XXX= Annual Average Daily Traffic (vehicles per day)

N

Approximate Scale
Scale: 1" = 4,000'



* Estimate by LSC

** CDOT 2020 Average Annual Daily Traffic

\+ Based on counts by LSC October 2021

\++Based on counts by LSC April 2021. The northbound left-turn and eastbound right-turn volumes have been adjusted based on the more recent counts at Stapleton/Eastonville.

Figure 4a

Existing (2021)+ Traffic

Grandview Reserve Phase 1 (LSC #S214240)

LSC TRANSPORTATION CONSULTANTS, INC.

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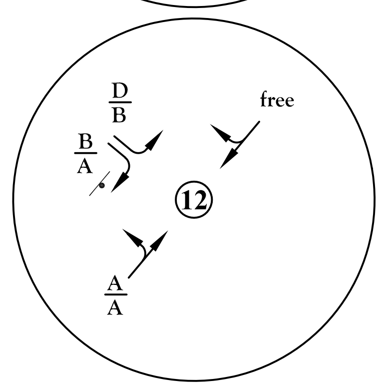
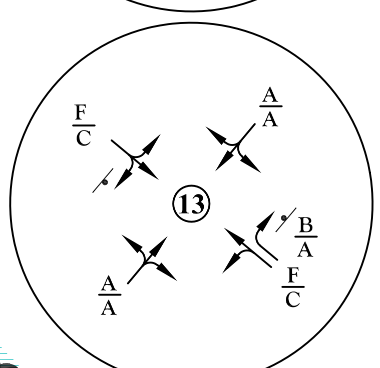
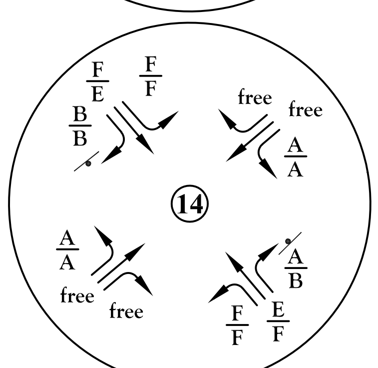
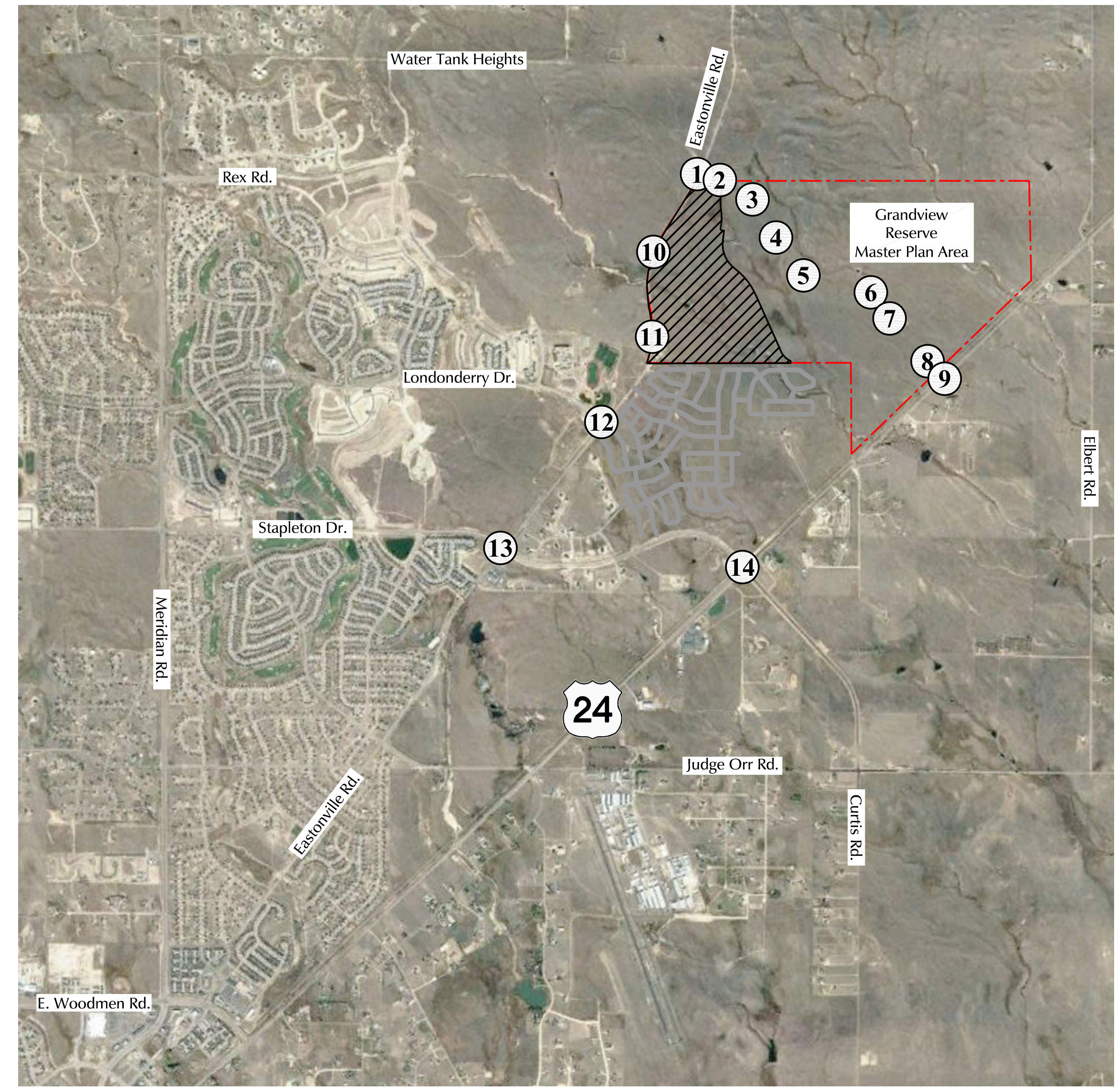






LEGEND:
Traffic Control Used in the Analysis:
= Stop Sign
= Traffic Signal
LOS Analysis Results:
A/B = AM Individual Movement Peak-Hour Level of Service / PM Individual Movement Peak-Hour Level of Service
C/C = AM Entire Intersection Peak-Hour Level of Service / PM Entire Intersection Peak-Hour Level of Service

Approximate Scale
Scale: 1"= 4,000'

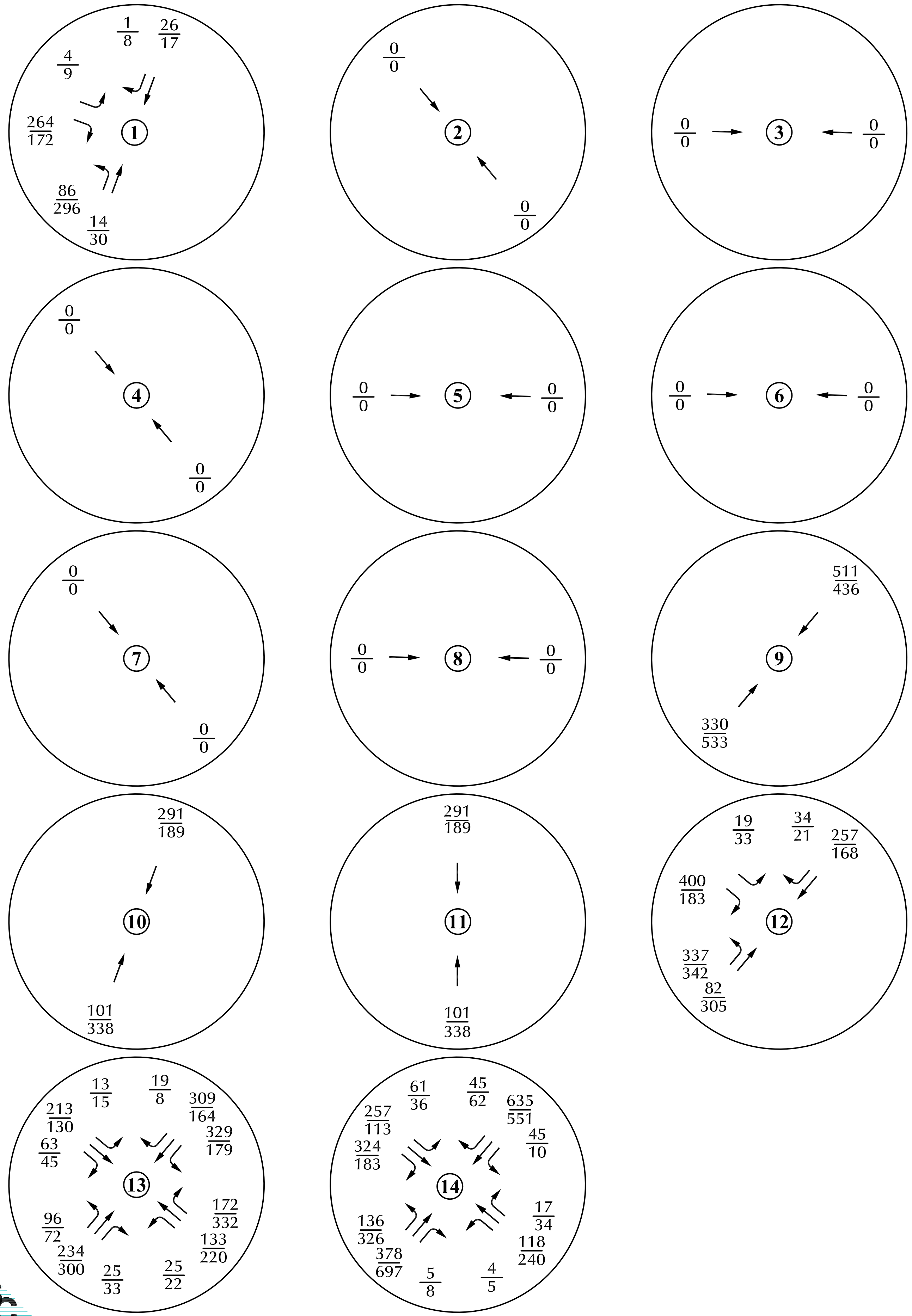


TRANSPORTATION CONSULTANTS, INC.

Figure 4b

Existing Lane Geometry, Traffic Control and Level of Service

Grandview Reserve Phase 1 (LSC #S214240)



LEGEND:

XX/XX = AM Weekday Peak-Hour Traffic (vehicles per hour) / PM Weekday Peak-Hour Traffic (vehicles per hour)

X,XXX= Annual Average Daily Traffic (vehicles per day)

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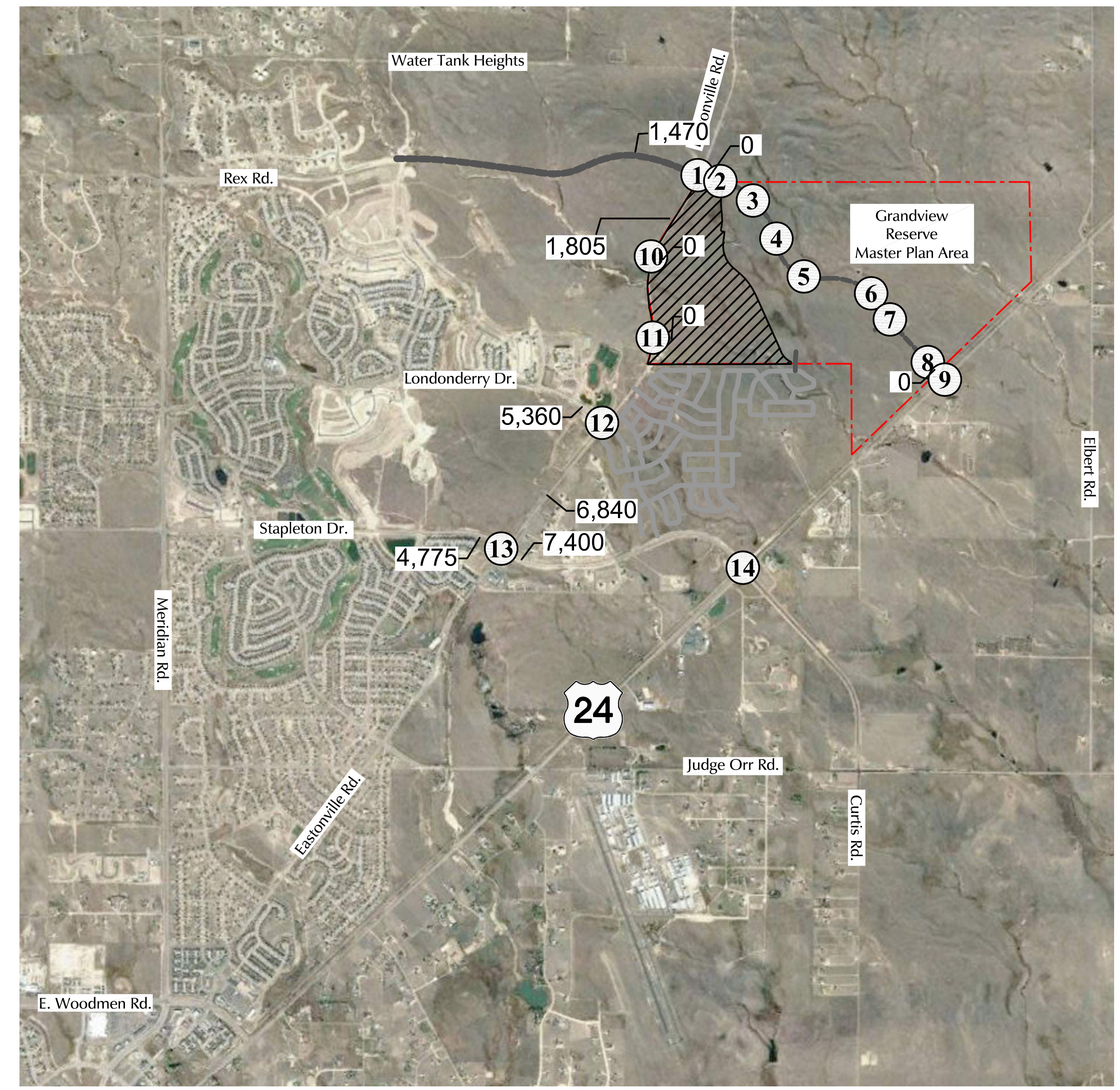
Approximate Scale
Scale: 1"= 4,000'

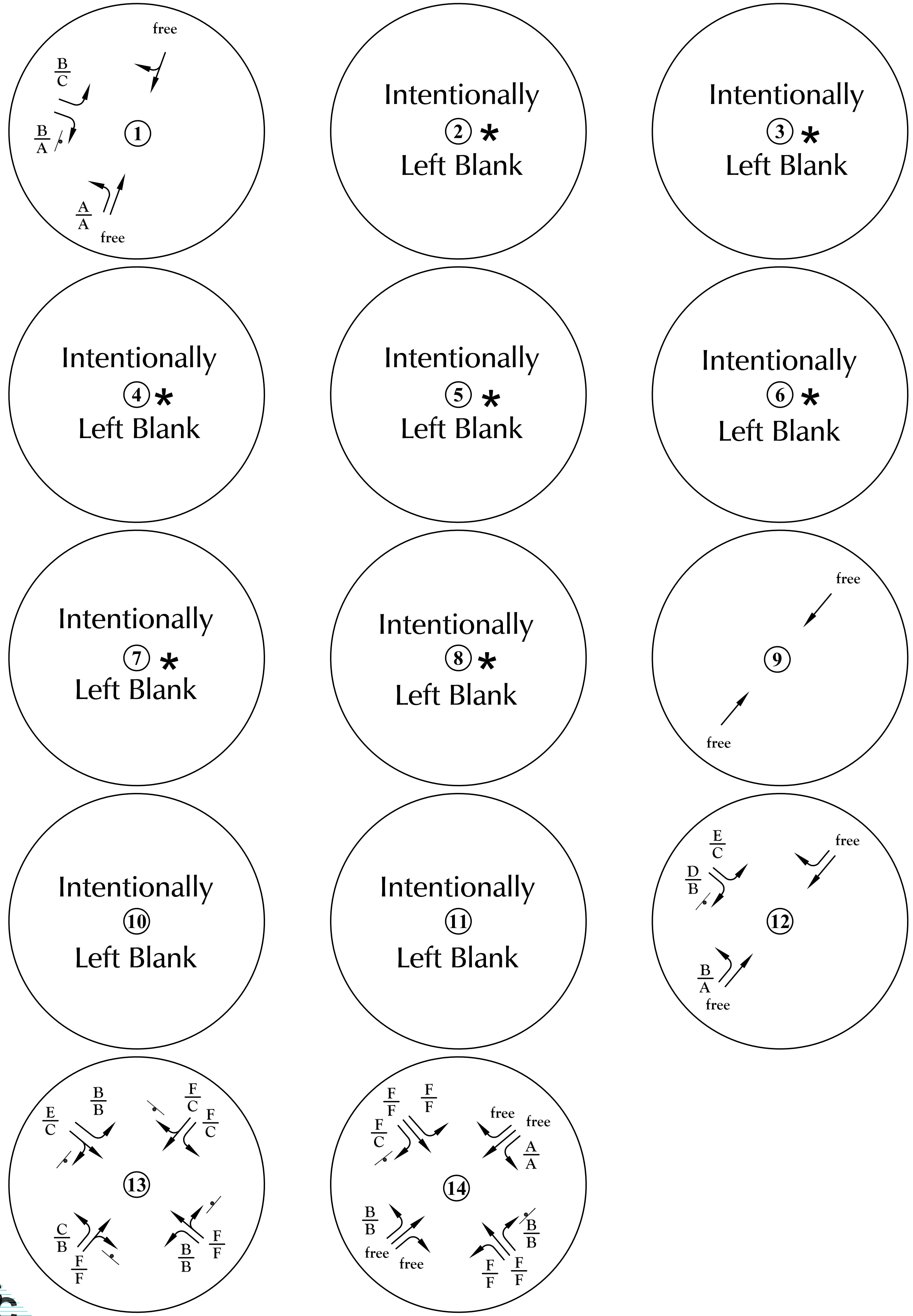


LSC TRANSPORTATION CONSULTANTS, INC.

Figure 5a

Year 2026 Background Traffic

Grandview Reserve Phase 1 (LSC #S214240)



LEGEND:

Traffic Control Used in the Analysis:

= Stop Sign

= Traffic Signal

LOS Analysis Results:

A/B = AM Individual Movement Peak-Hour Level of Service / PM Individual Movement Peak-Hour Level of Service

C/C = AM Entire Intersection Peak-Hour Level of Service / PM Entire Intersection Peak-Hour Level of Service

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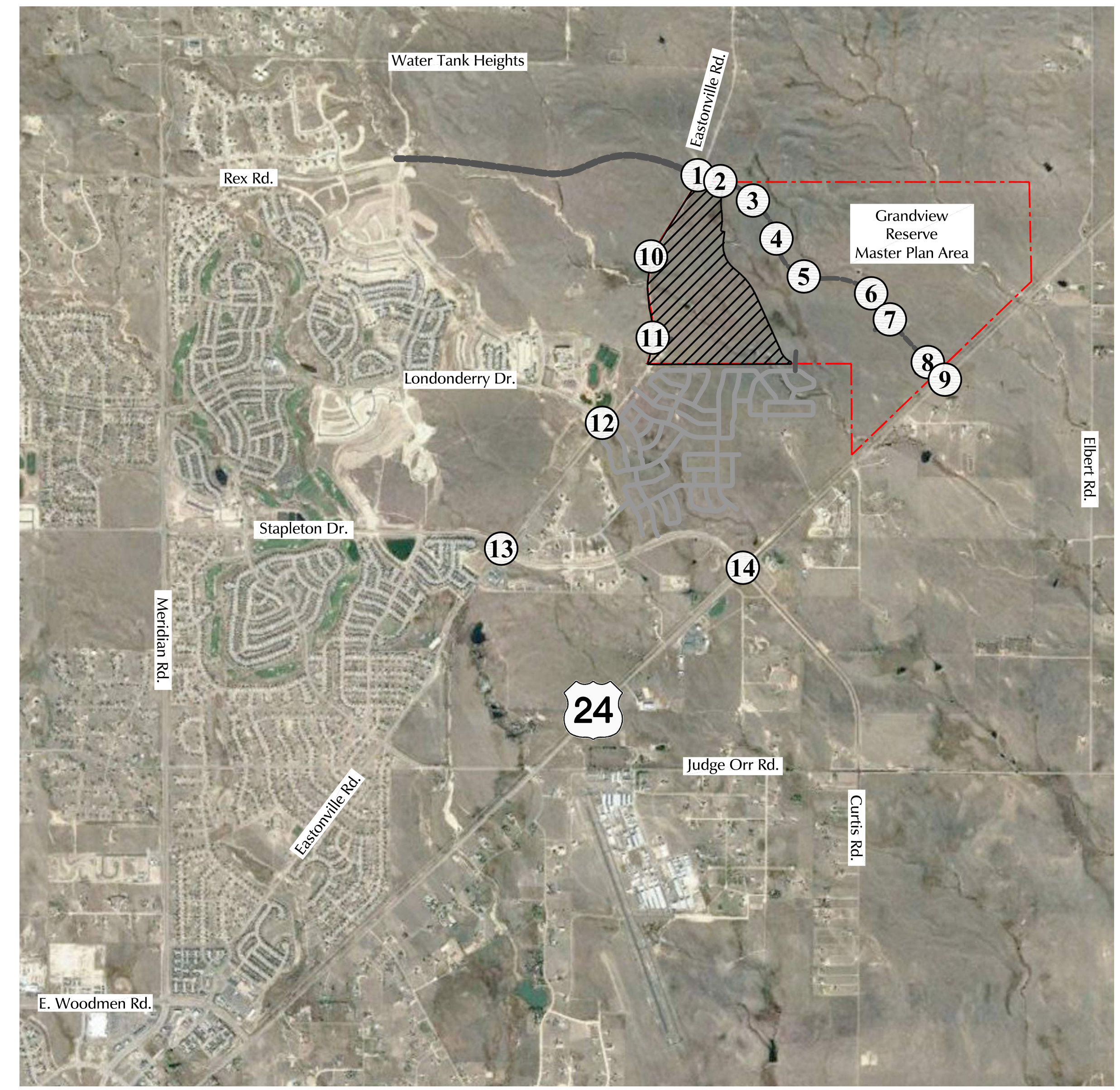
Approximate Scale
Scale: 1"= 4,000'



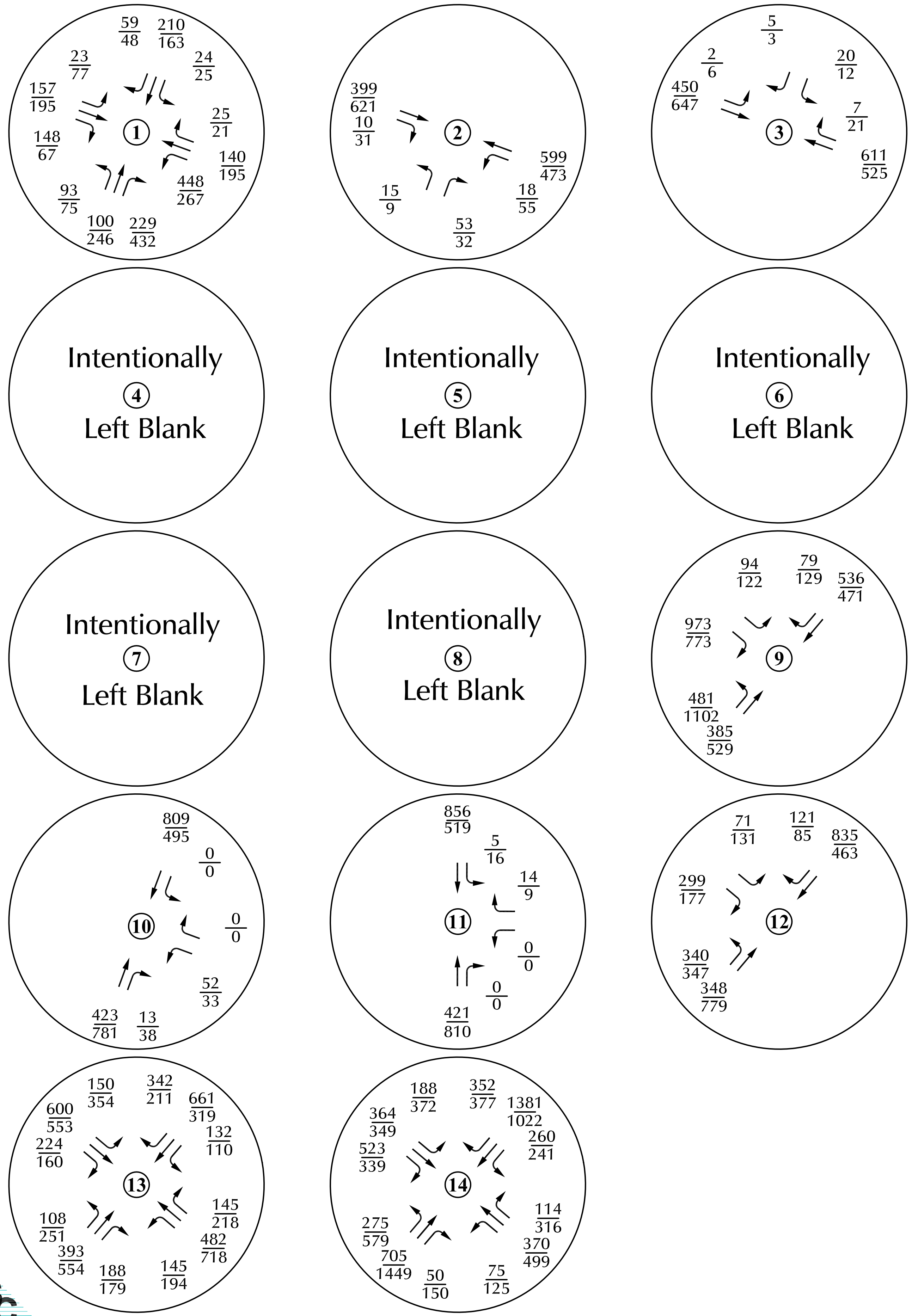
*This section of Rex Rd. between Ivybridge Blvd and US 24 is not planned to be constructed with Phase 1

Figure 5b

Year 2026 Background Lane Geometry, Traffic Control and Levels of Service

Grandview Reserve Phase 1 (LSC #S214240)

LSC TRANSPORTATION CONSULTANTS, INC.



LEGEND:

$\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour) / PM Weekday Peak-Hour Traffic (vehicles per hour)

X,XXX= Annual Average Daily Traffic (vehicles per day)

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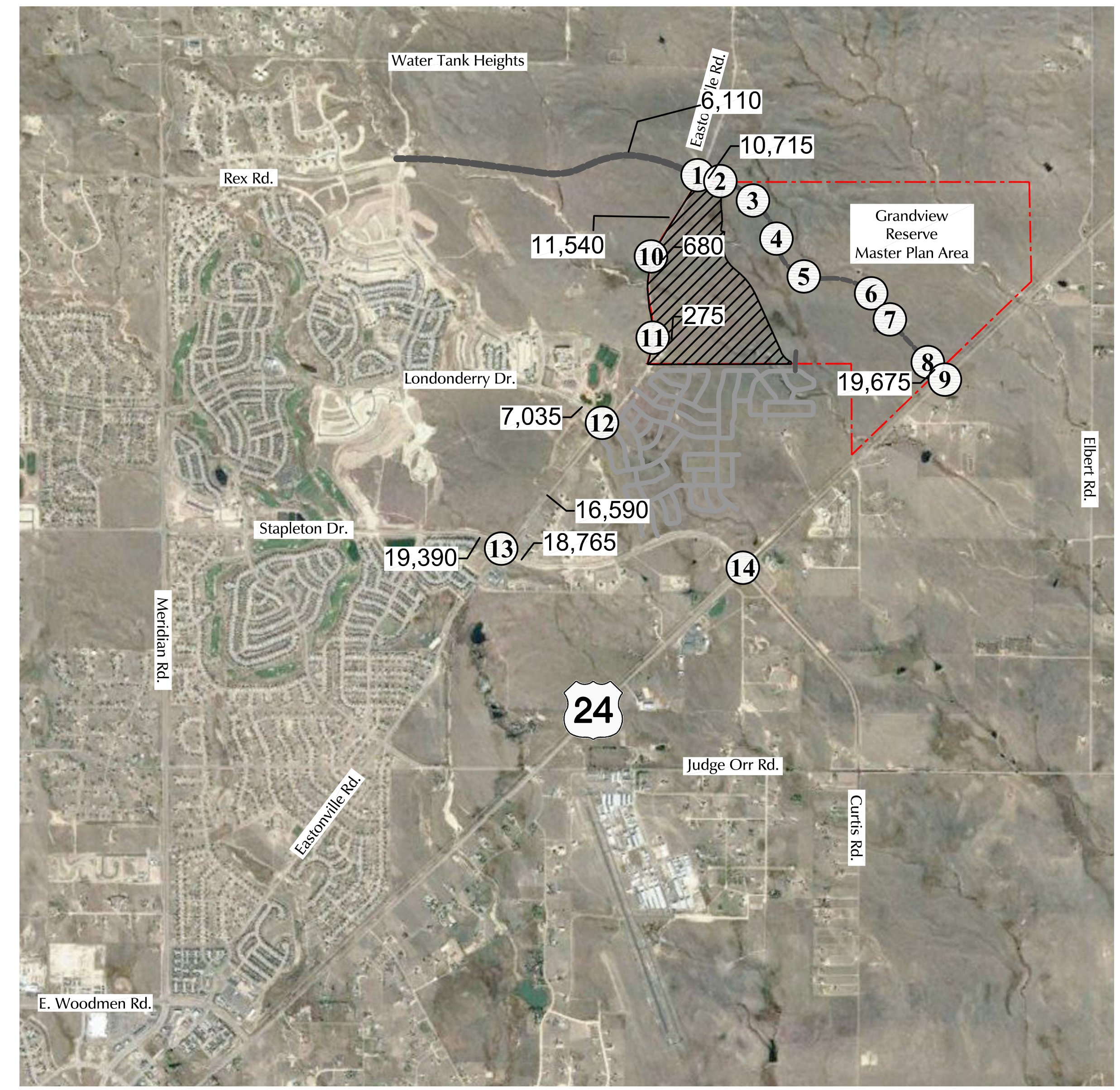
Approximate Scale
Scale: 1"= 4,000'

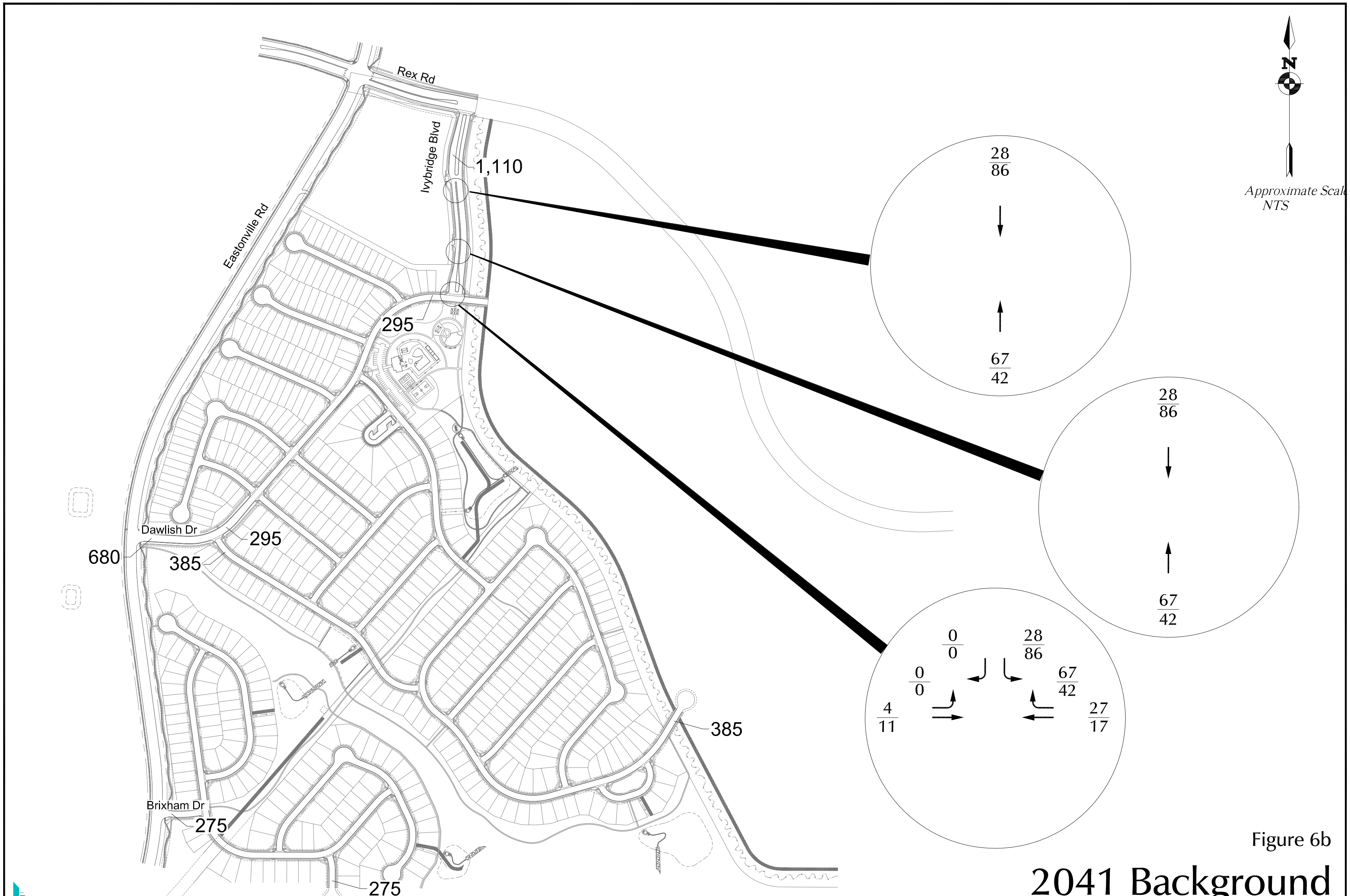


LSC TRANSPORTATION CONSULTANTS, INC.

Figure 6a

Year 2041 Background Traffic

Grandview Reserve Phase 1 (LSC #S214240)



X,XXX = Annual Average Daily Traffic (vehicles per day)

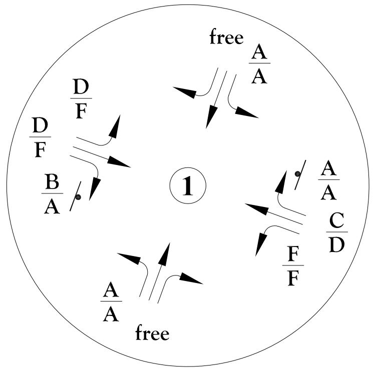
XX/XX = AM Weekday Peak-Hour Traffic (vehicles per hour) / PM Weekday Peak-Hour Traffic (vehicles per hour)

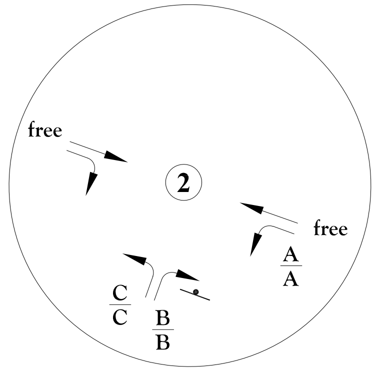
LSC TRANSPORTATION CONSULTANTS, INC.

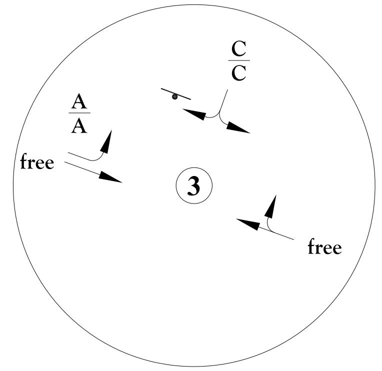
Figure 6b

2041 Background Traffic on Internal Streets

Grandview Reserve Phase 1 (LSC #S214240)







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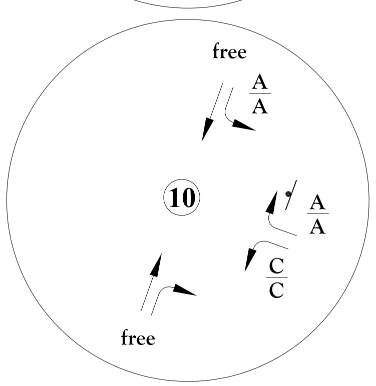

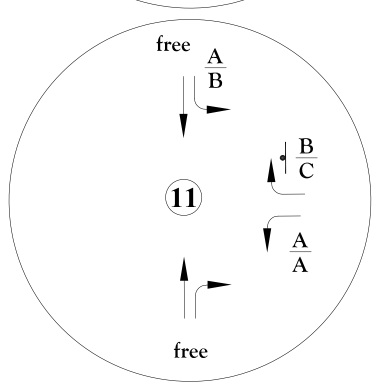

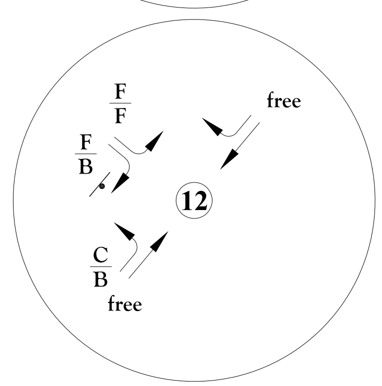

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LEGEND:

Traffic Control Used in the Analysis:

= Stop Sign

= Traffic Signal

LOS Analysis Results:

A = AM Individual Movement Peak-Hour Level of Service

B = PM Individual Movement Peak-Hour Level of Service

C = AM Entire Intersection Peak-Hour Level of Service

C = PM Entire Intersection Peak-Hour Level of Service

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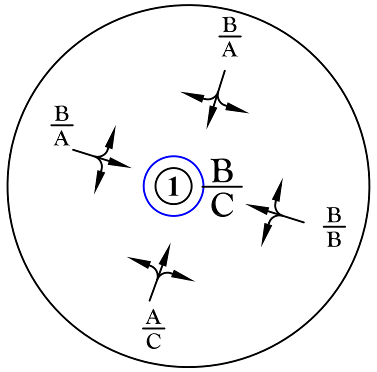
Approximate Scale
Scale: 1"= 4,000'

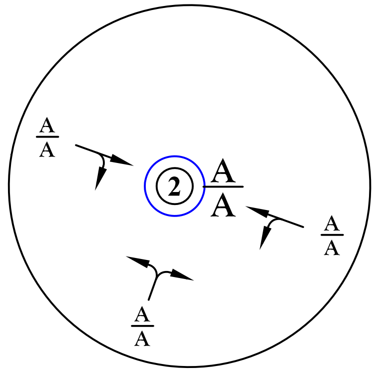
Figure 6c

Year 2041 Background Lane Geometry, Traffic Control and Levels of Service With Two-Way Stop-Sign Control

Grandview Reserve Phase 1 (LSC #S214240)

LSC TRANSPORTATION CONSULTANTS, INC.





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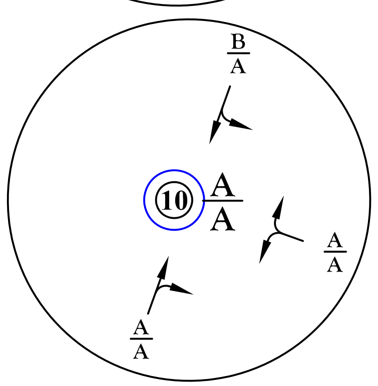

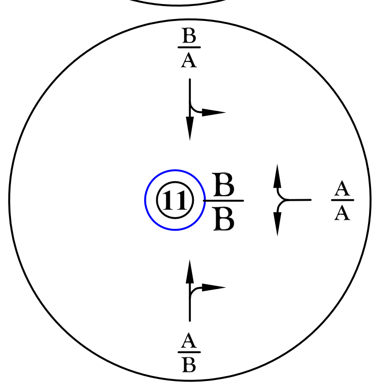

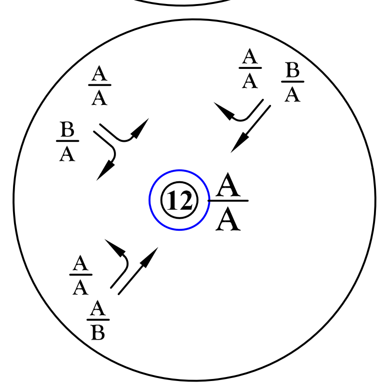

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LEGEND:

Traffic Control Used in the Analysis:

= Stop Sign

= Traffic Signal

= Modern Roundabout

LOS Analysis Results:

A/B = AM Individual Movement Peak-Hour Level of Service / PM Individual Movement Peak-Hour Level of Service

C/C = AM Entire Intersection Peak-Hour Level of Service / PM Entire Intersection Peak-Hour Level of Service

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Approximate Scale
Scale: 1"= 4,000'

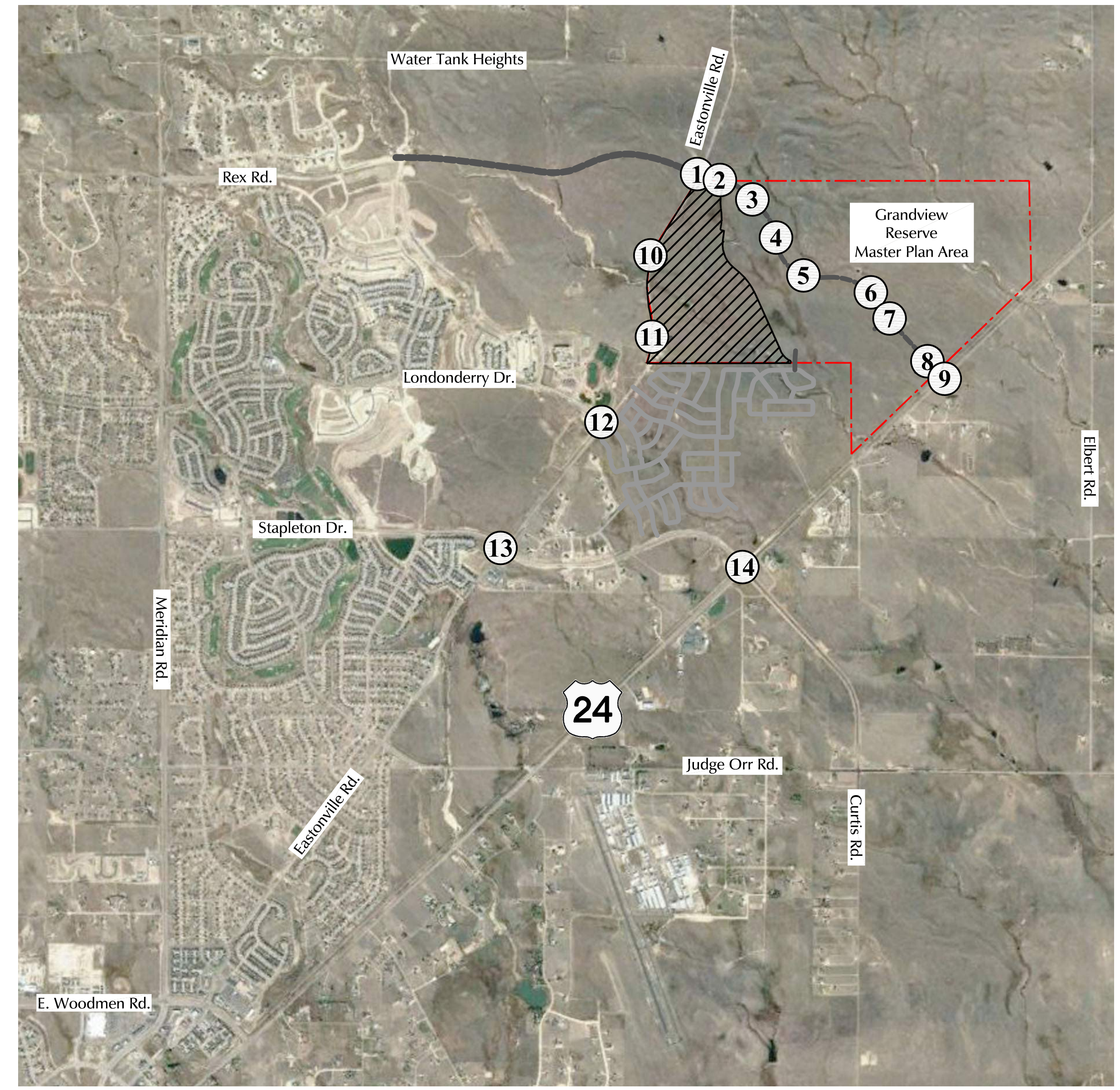
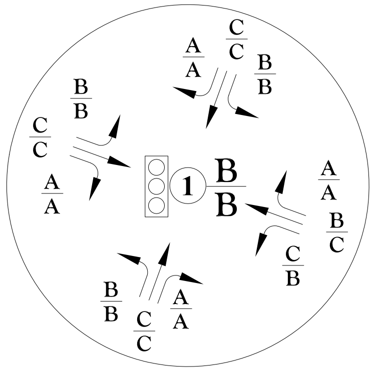


Figure 6d

Year 2041 Background Lane Geometry, Traffic Control and Levels of Service with Modern Roundabouts

Grandview Reserve Phase 1 (LSC #S214240)

LSC TRANSPORTATION CONSULTANTS, INC.



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LEGEND:
Traffic Control Used in the Analysis:
= Stop Sign
= Traffic Signal
LOS Analysis Results:
$\frac{A}{B}$ = AM Individual Movement Peak-Hour Level of Service / PM Individual Movement Peak-Hour Level of Service
$\frac{C}{C}$ = AM Entire Intersection Peak-Hour Level of Service / PM Entire Intersection Peak-Hour Level of Service

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Approximate Scale
Scale: 1" = 4,000'

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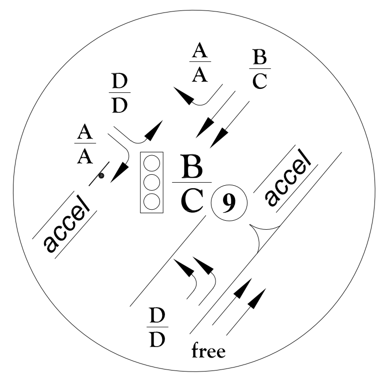

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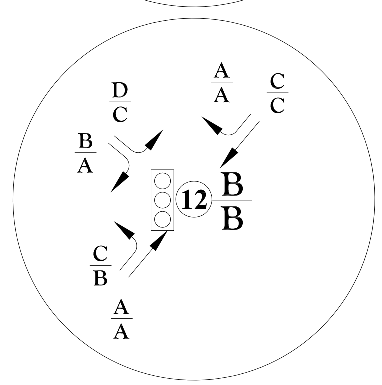
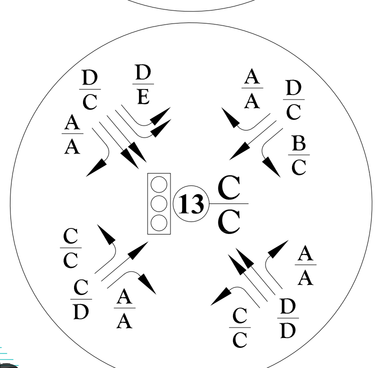
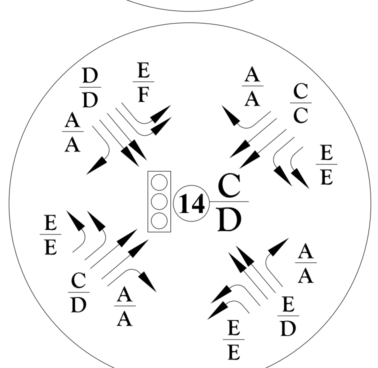






LSC
TRANSPORTATION CONSULTANTS, INC.

Figure 6e

Year 2041 Background Lane Geometry, Traffic Control and Levels of Service With Signal Control

Grandview Reserve Phase 1 (LSC #S214240)

Figure 7

Short-Term Directional Distribution of Site-Generated Traffic

Grandview Reserve Phase 1 (LSC #S214240)

LEGEND:

XX% = Percent Directional Distribution

TRANSPORTATION CONSULTANTS, INC.

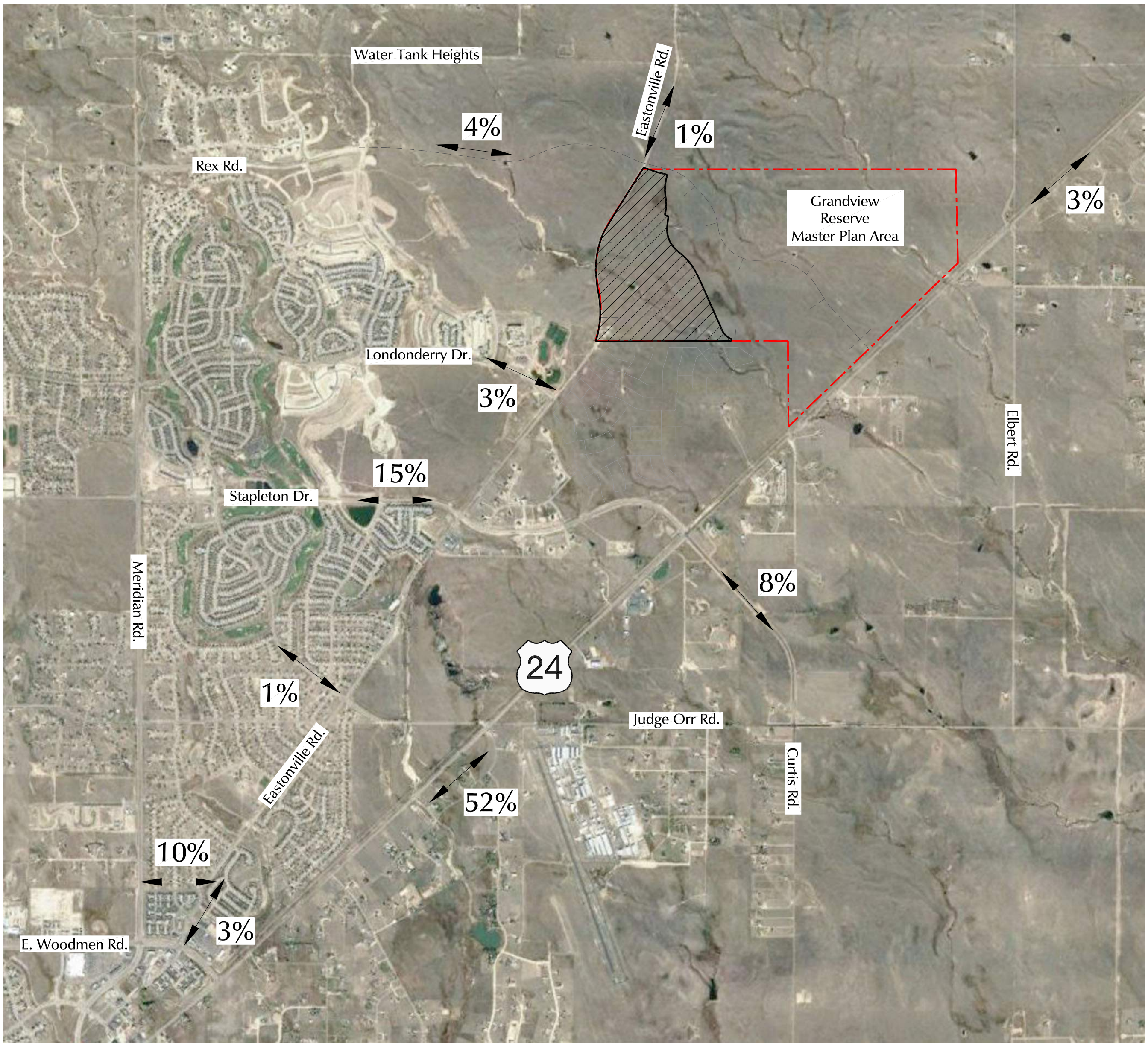


Figure 8

Long-Term Directional Distribution of Site-Generated Traffic

Grandview Reserve Phase 1 (LSC #S214240)

LEGEND:

XX% = Percent Directional Distribution

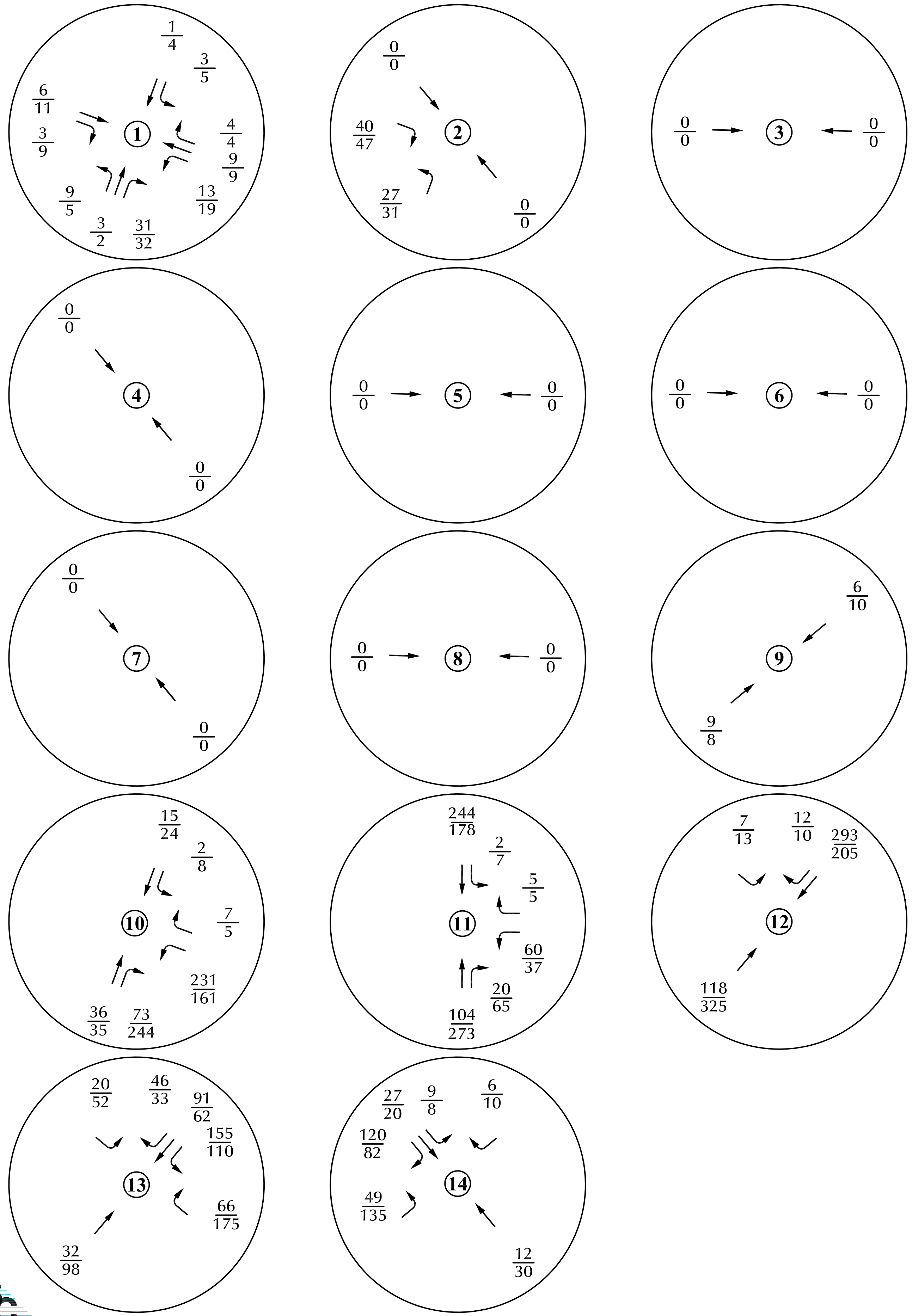
LSC TRANSPORTATION CONSULTANTS, INC.

LEGEND:

XX/XX = AM Weekday Peak-Hour Traffic (vehicles per hour) / PM Weekday Peak-Hour Traffic (vehicles per hour)

X,XXX= Annual Average Daily Traffic (vehicles per day)

Approximate Scale
Scale: 1"= 4,000'



TRANSPORTATION CONSULTANTS, INC.

Figure 9a

Assignment of Phase 1 Short-Term Site-Generated Traffic

Grandview Reserve Phase 1 (LSC #S214240)

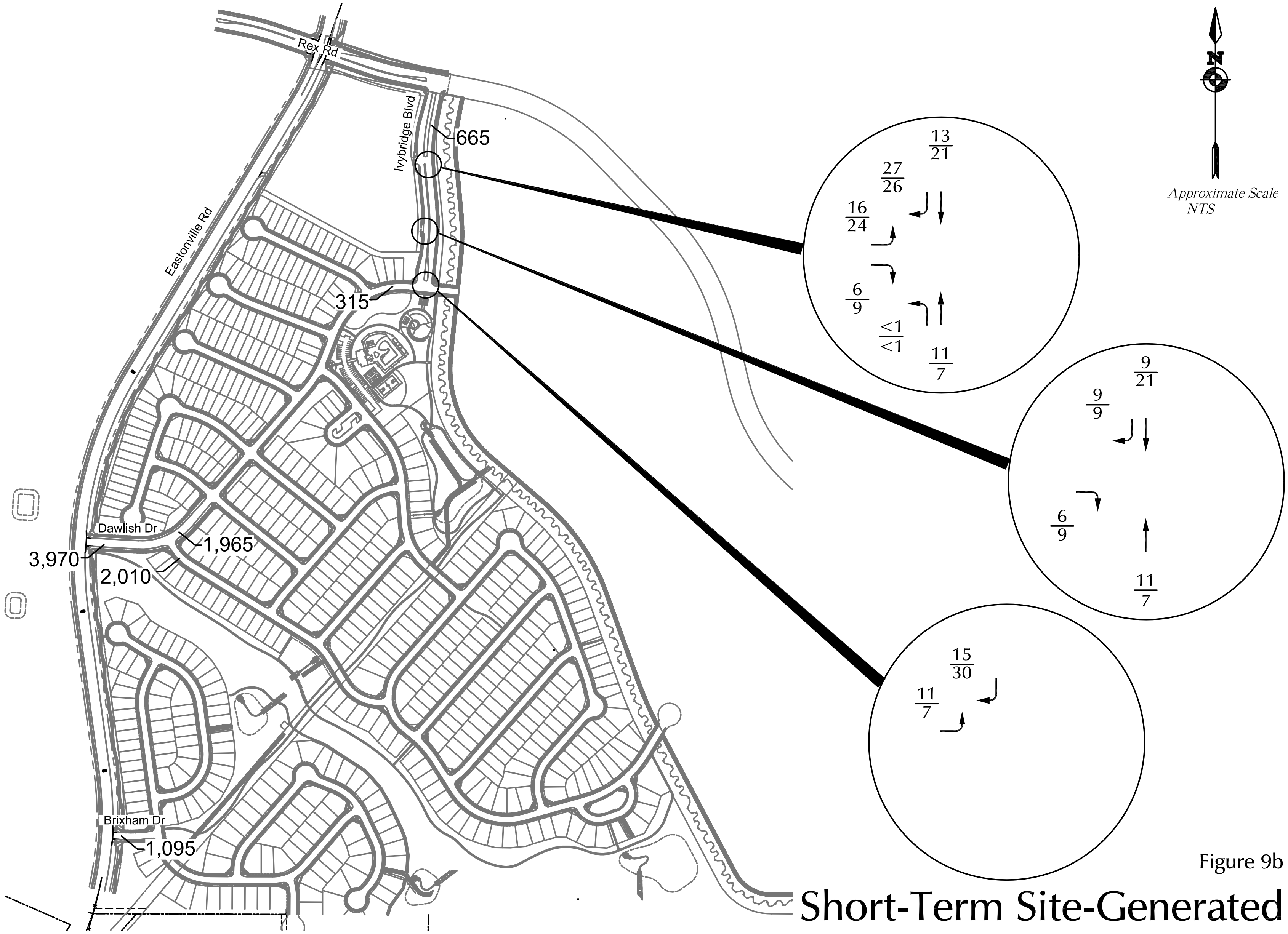


Figure 9b

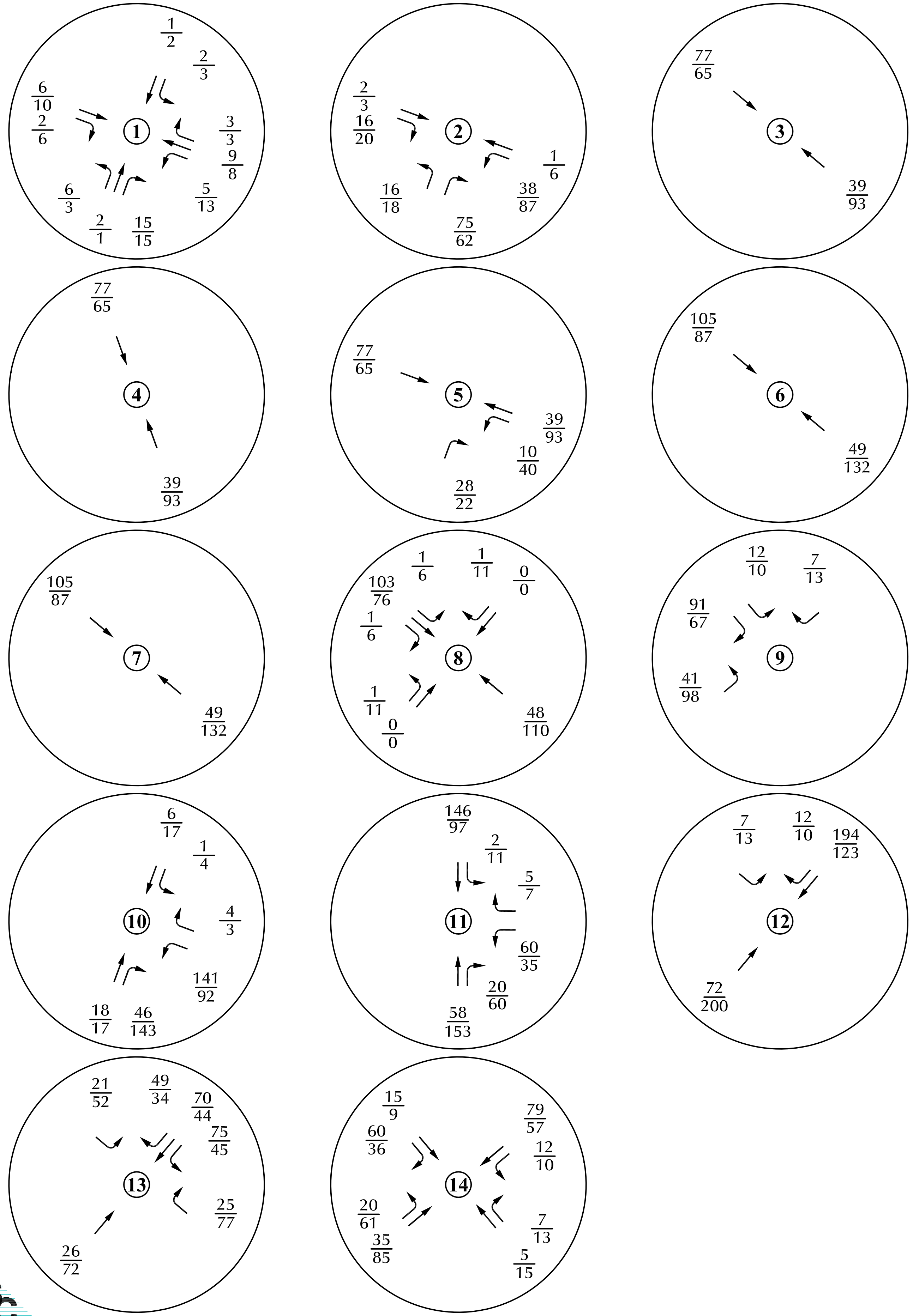
Short-Term Site-Generated Traffic on Internal Streets

Grandview Reserve Phase 1 (LSC #S214240)

X,XXX= Average Daily Traffic (vehicles per day)

$\frac{XX}{XX}$ = $\frac{\text{AM Weekday Peak-Hour Traffic (vehicles per hour)}}{\text{PM Weekday Peak-Hour Traffic (vehicles per hour)}}$

LSC TRANSPORTATION CONSULTANTS, INC.



LEGEND:

XX/XX = AM Weekday Peak-Hour Traffic (vehicles per hour) / PM Weekday Peak-Hour Traffic (vehicles per hour)

X,XXX= Annual Average Daily Traffic (vehicles per day)

N

Approximate Scale
Scale: 1"= 4,000'

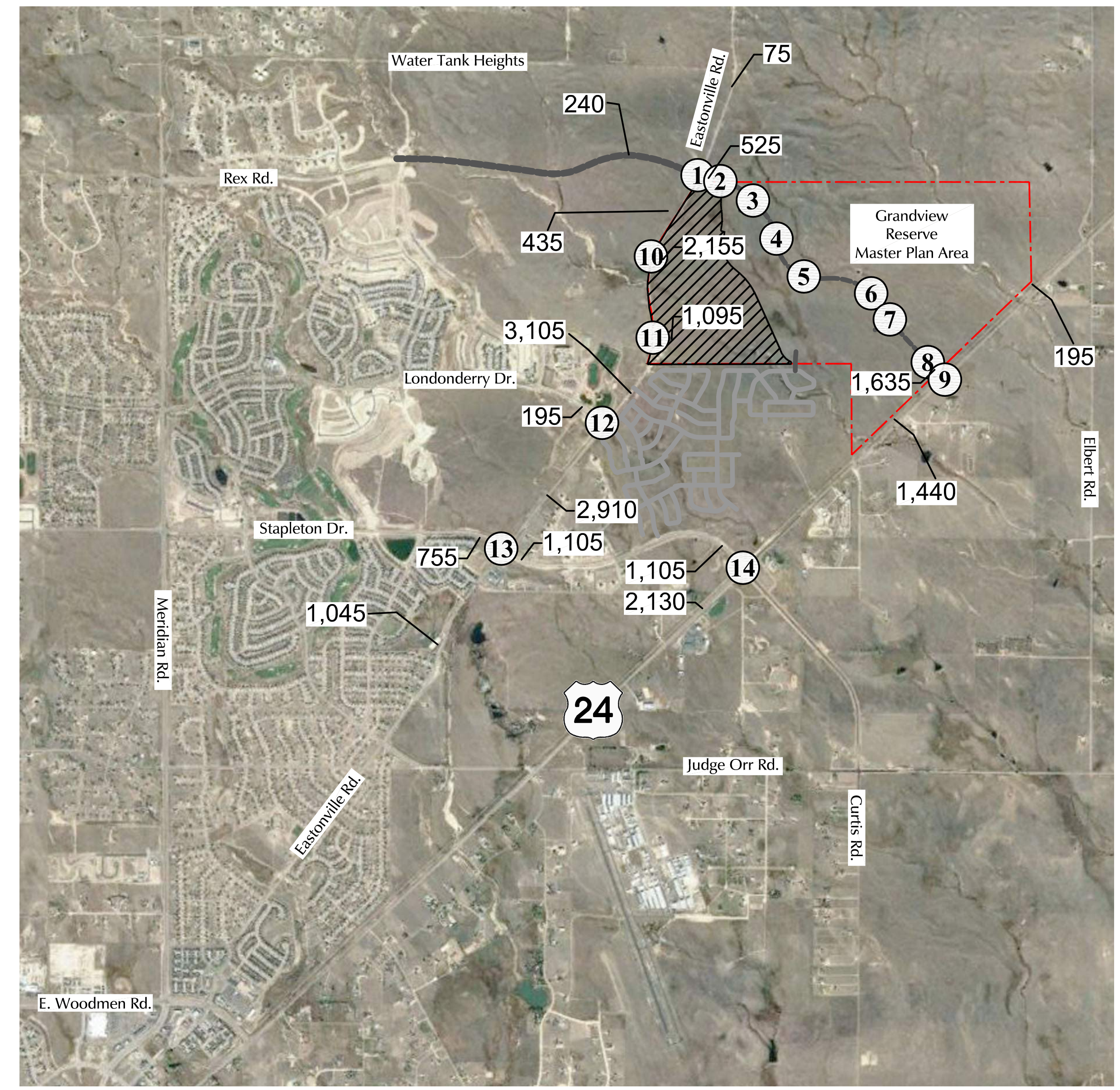
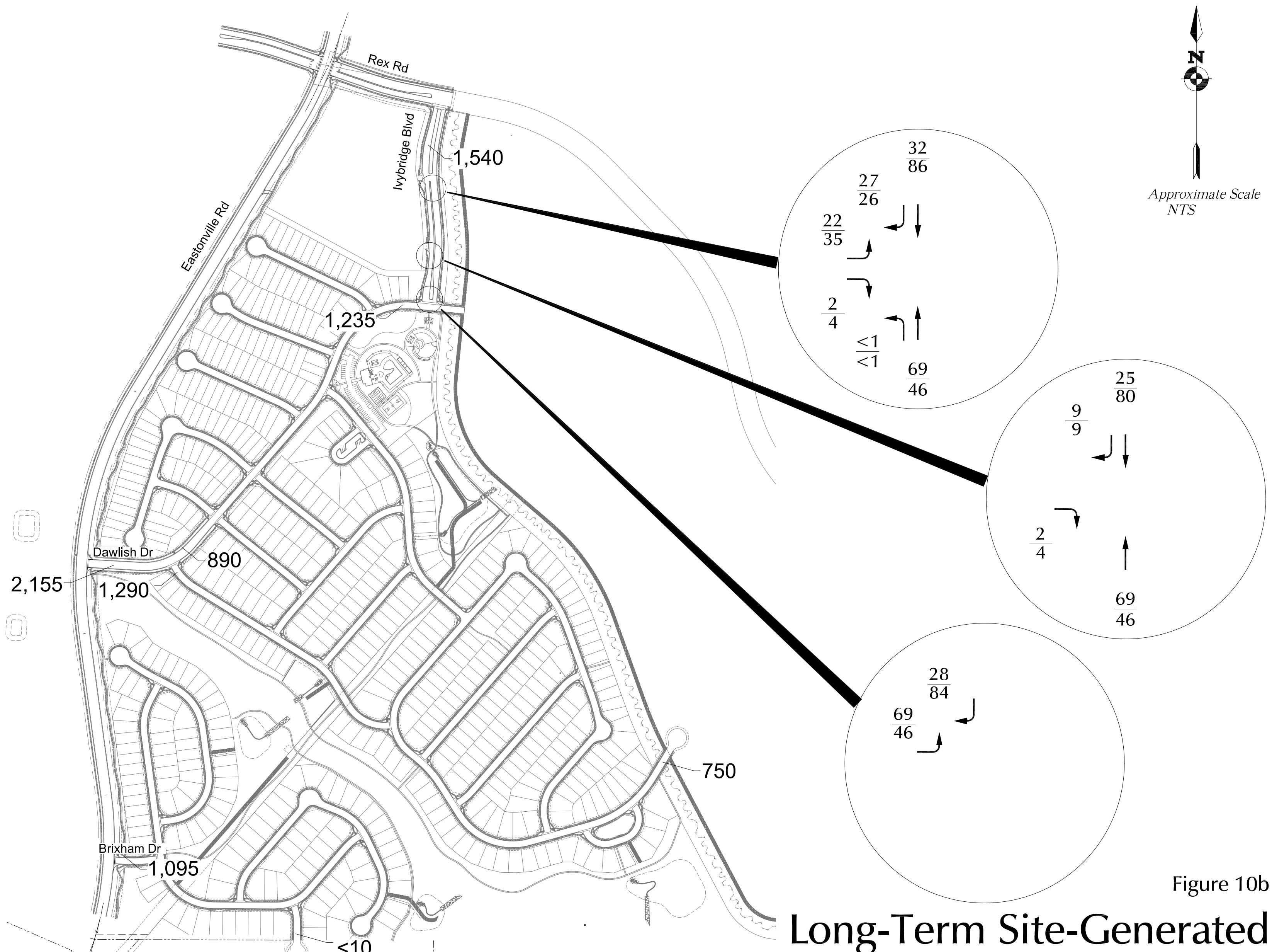


Figure 10a

Assignment of Phase 1 Long-Term Site-Generated Traffic

Grandview Reserve Phase 1 (LSC #S214240)

LSC TRANSPORTATION CONSULTANTS, INC.



X,XXX = Average Daily Traffic (vehicles per day)

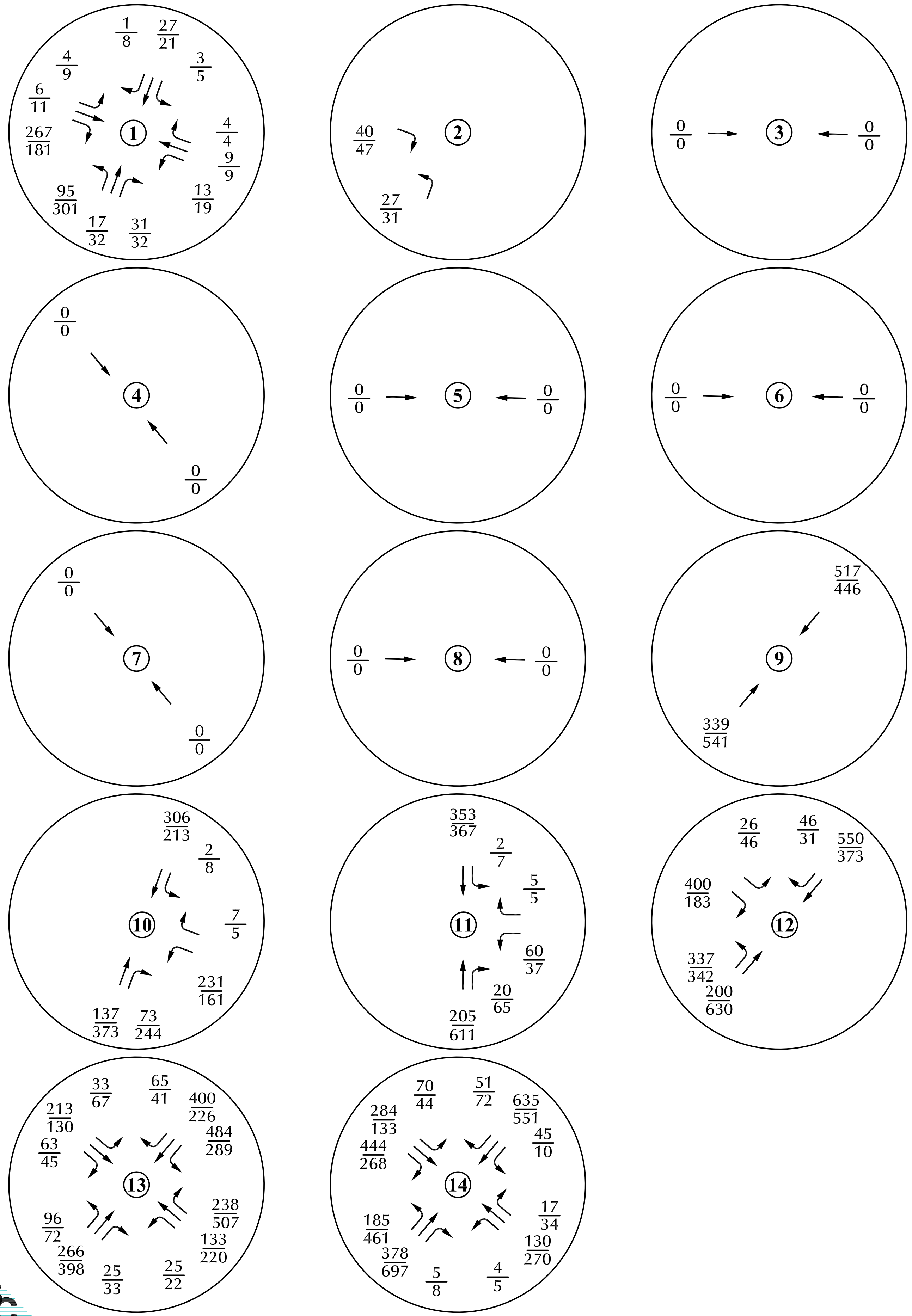
XX/XX = AM Weekday Peak-Hour Traffic (vehicles per hour) / PM Weekday Peak-Hour Traffic (vehicles per hour)

LSC TRANSPORTATION CONSULTANTS, INC.

Figure 10b

Long-Term Site-Generated Traffic on Internal Streets

Grandview Reserve Phase 1 (LSC #S214240)



LEGEND:

$\frac{XX}{XX}$ = AM Weekday Peak-Hour Traffic (vehicles per hour) / PM Weekday Peak-Hour Traffic (vehicles per hour)

X,XXX= Annual Average Daily Traffic (vehicles per day)

N

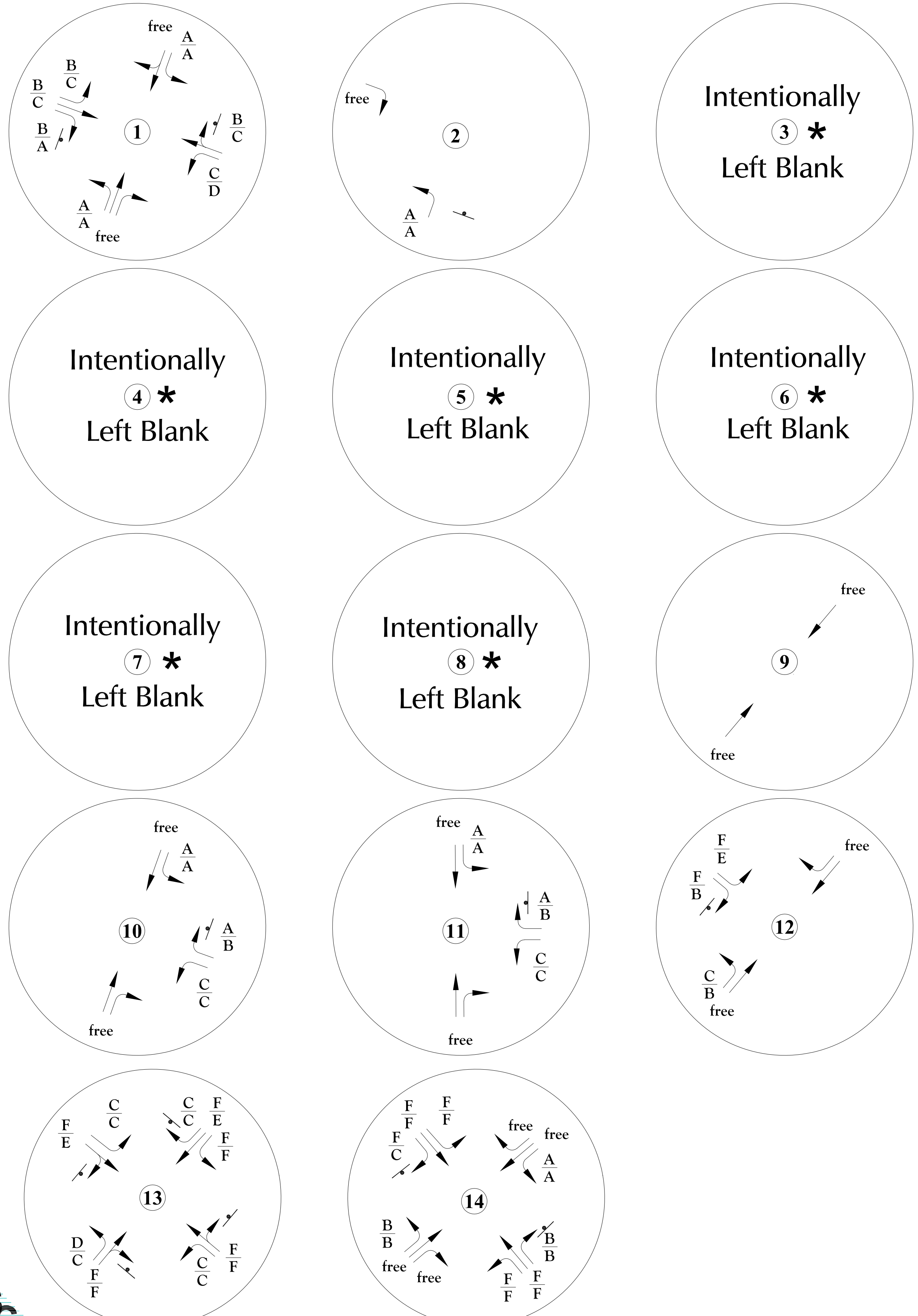
Approximate Scale
Scale: 1"= 4,000'

LSC
TRANSPORTATION CONSULTANTS, INC.

Figure 11a

Year 2026 Total Traffic

Grandview Reserve Phase 1 (LSC #S214240)



LEGEND:
Traffic Control Used in the Analysis:
= Stop Sign
= Traffic Signal

LOS Analysis Results:
A/B = AM Individual Movement Peak-Hour Level of Service / PM Individual Movement Peak-Hour Level of Service
C/C = AM Entire Intersection Peak-Hour Level of Service / PM Entire Intersection Peak-Hour Level of Service

N

Approximate Scale
Scale: 1"= 4,000'

*This section of Rex Rd. between Ivybridge Blvd and US 24 is not planned to be constructed with Phase 1

Figure 11b

Year 2026 Total Lane Geometry, Traffic Control and Levels of Service with Stop-Sign Control

Grandview Reserve Phase 1 (LSC #S214240)

LSC TRANSPORTATION CONSULTANTS, INC.

Intentionally
1
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Intentionally
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Intentionally
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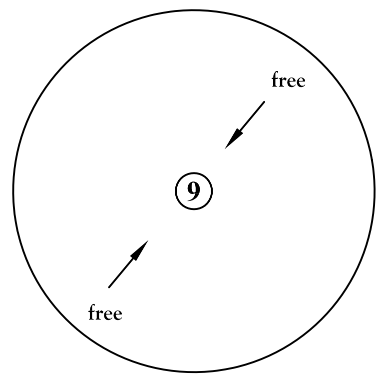
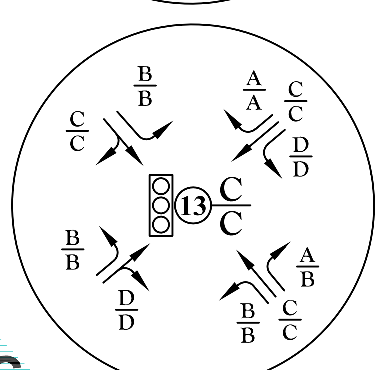
Intentionally
8
Left Blank

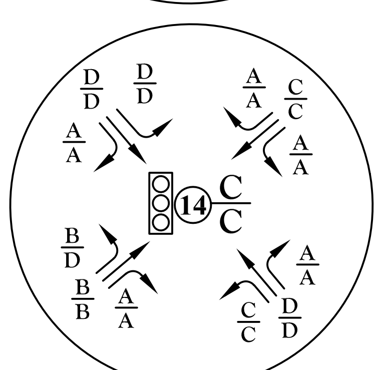


Intentionally
10
Left Blank

Intentionally
11
Left Blank

Intentionally
12
Left Blank





LEGEND:

Traffic Control Used in the Analysis:

= Stop Sign

= Traffic Signal

LOS Analysis Results:

A/B = AM Individual Movement Peak-Hour Level of Service / PM Individual Movement Peak-Hour Level of Service

C/C = AM Entire Intersection Peak-Hour Level of Service / PM Entire Intersection Peak-Hour Level of Service

N

Approximate Scale
Scale: 1"= 4,000'

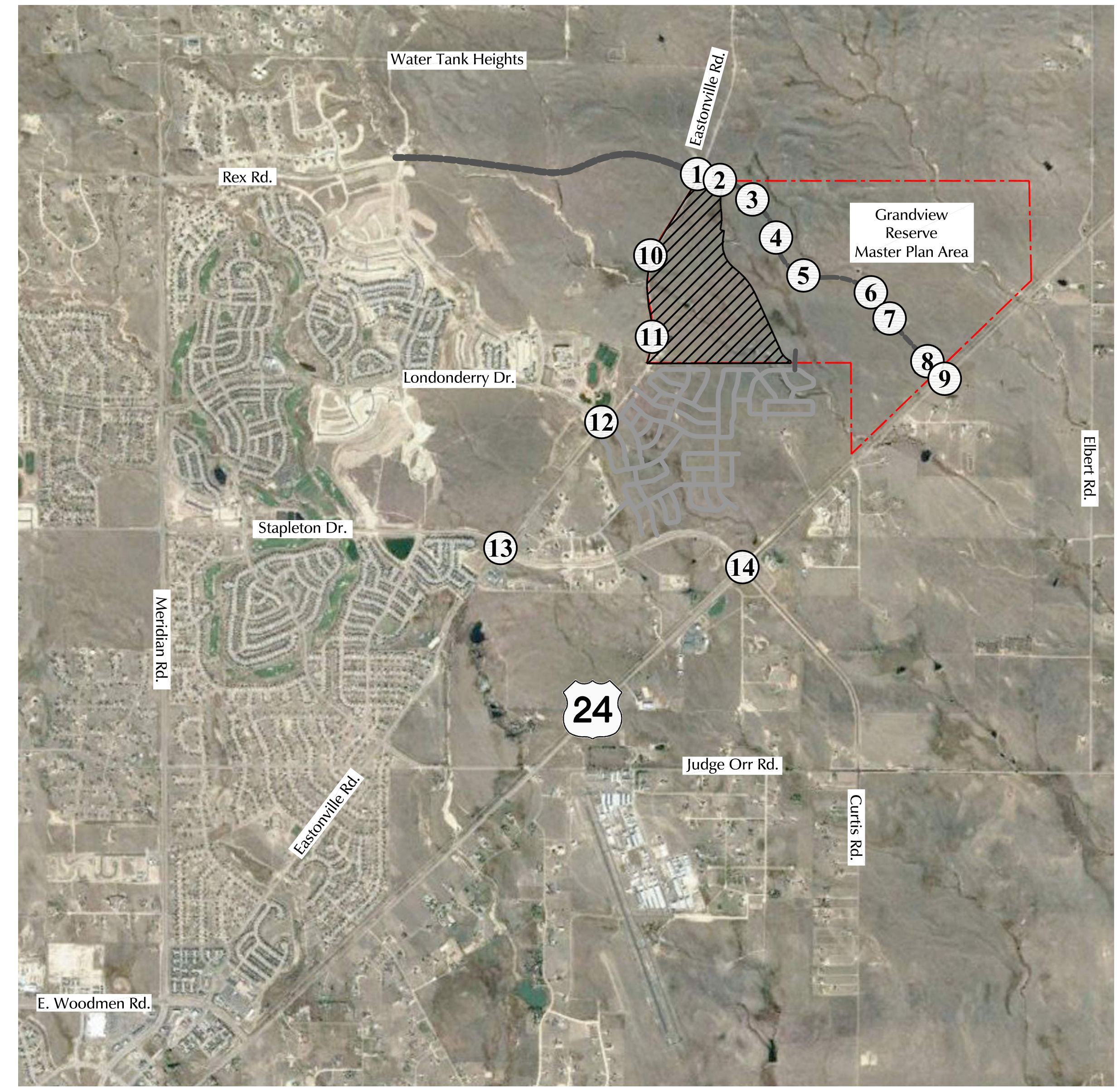
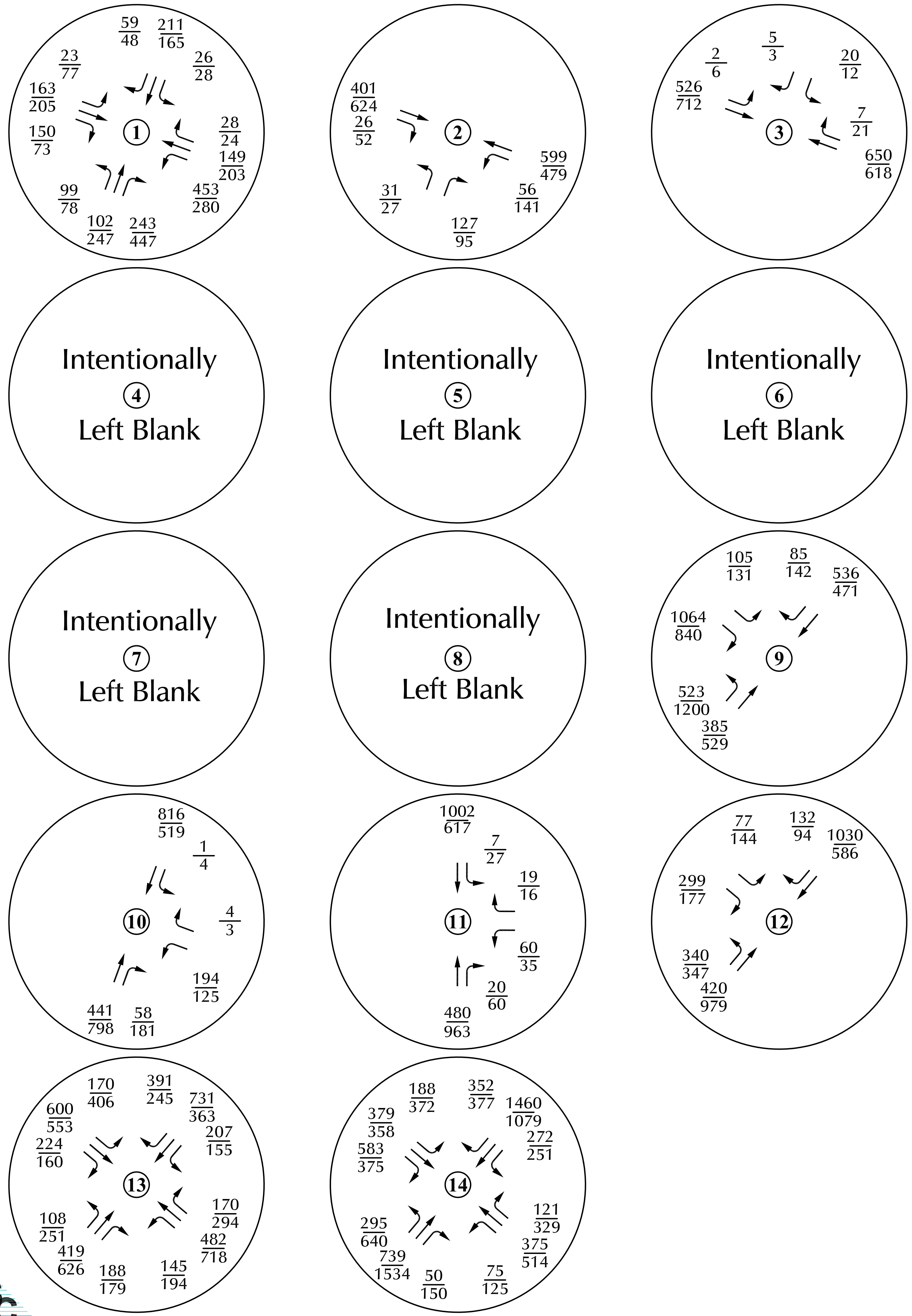


Figure 11c

Year 2026 Total Lane Geometry, Traffic Control and Levels of Service with Traffic Signal Control

Grandview Reserve Phase 1 (LSC #S214240)

LSC TRANSPORTATION CONSULTANTS, INC.



LEGEND:

XX/XX = AM Weekday Peak-Hour Traffic (vehicles per hour) / PM Weekday Peak-Hour Traffic (vehicles per hour)

X,XXX= Annual Average Daily Traffic (vehicles per day)

N

Approximate Scale
Scale: 1"= 4,000'

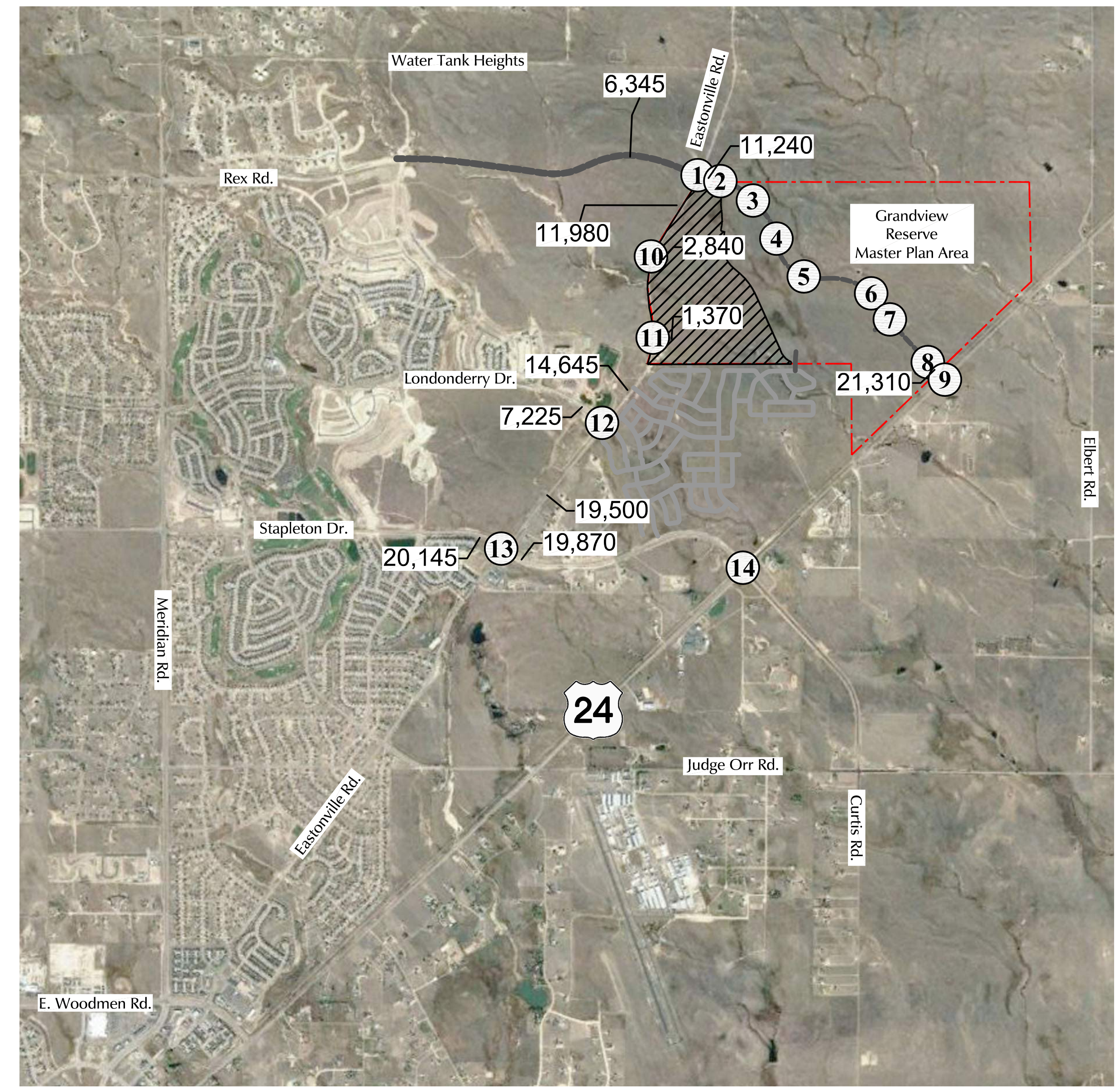
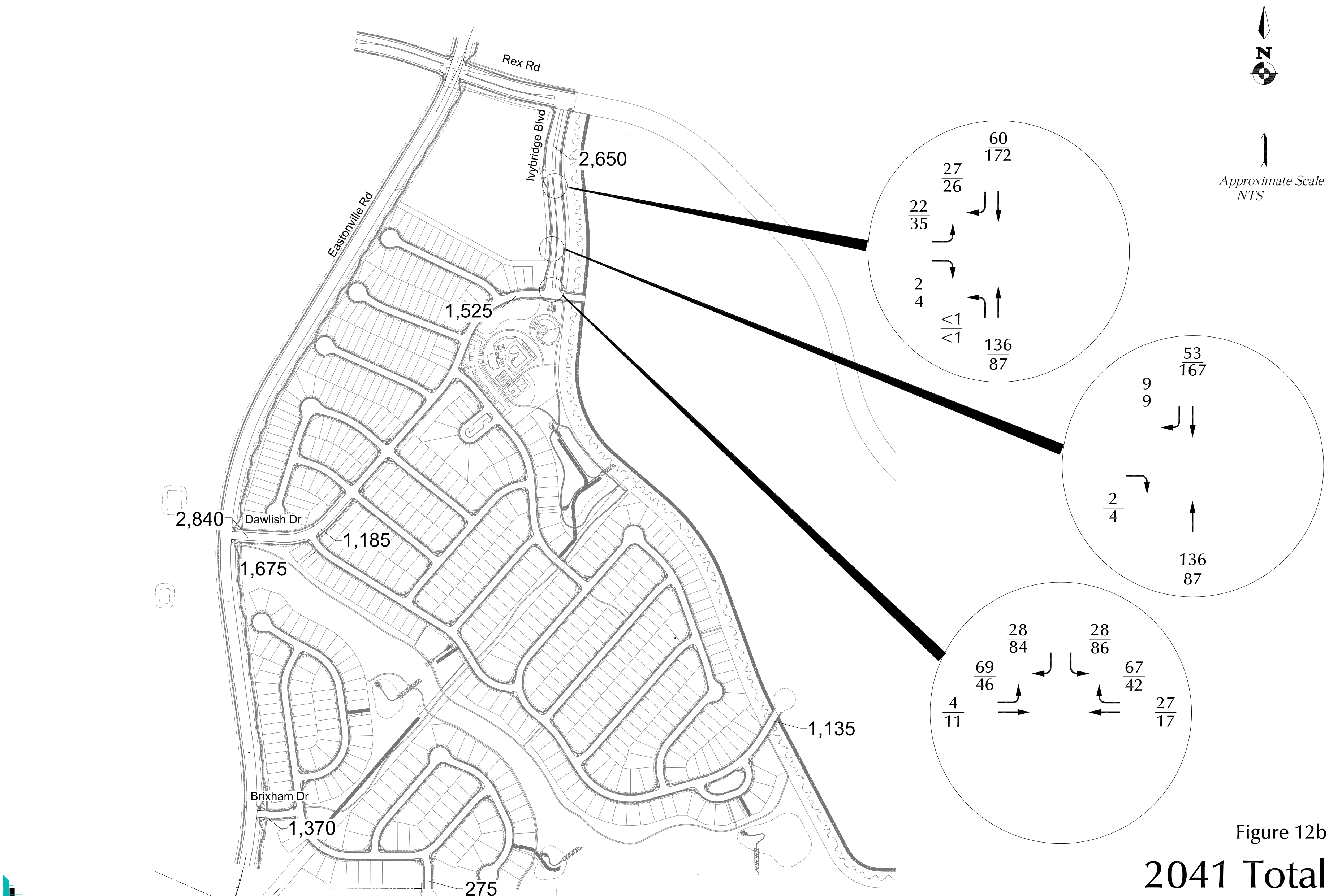


Figure 12a

Year 2041 Total Traffic

Grandview Reserve Phase 1 (LSC #S214240)

LSC TRANSPORTATION CONSULTANTS, INC.



X,XXX= Annual Average Daily Traffic (vehicles per day)

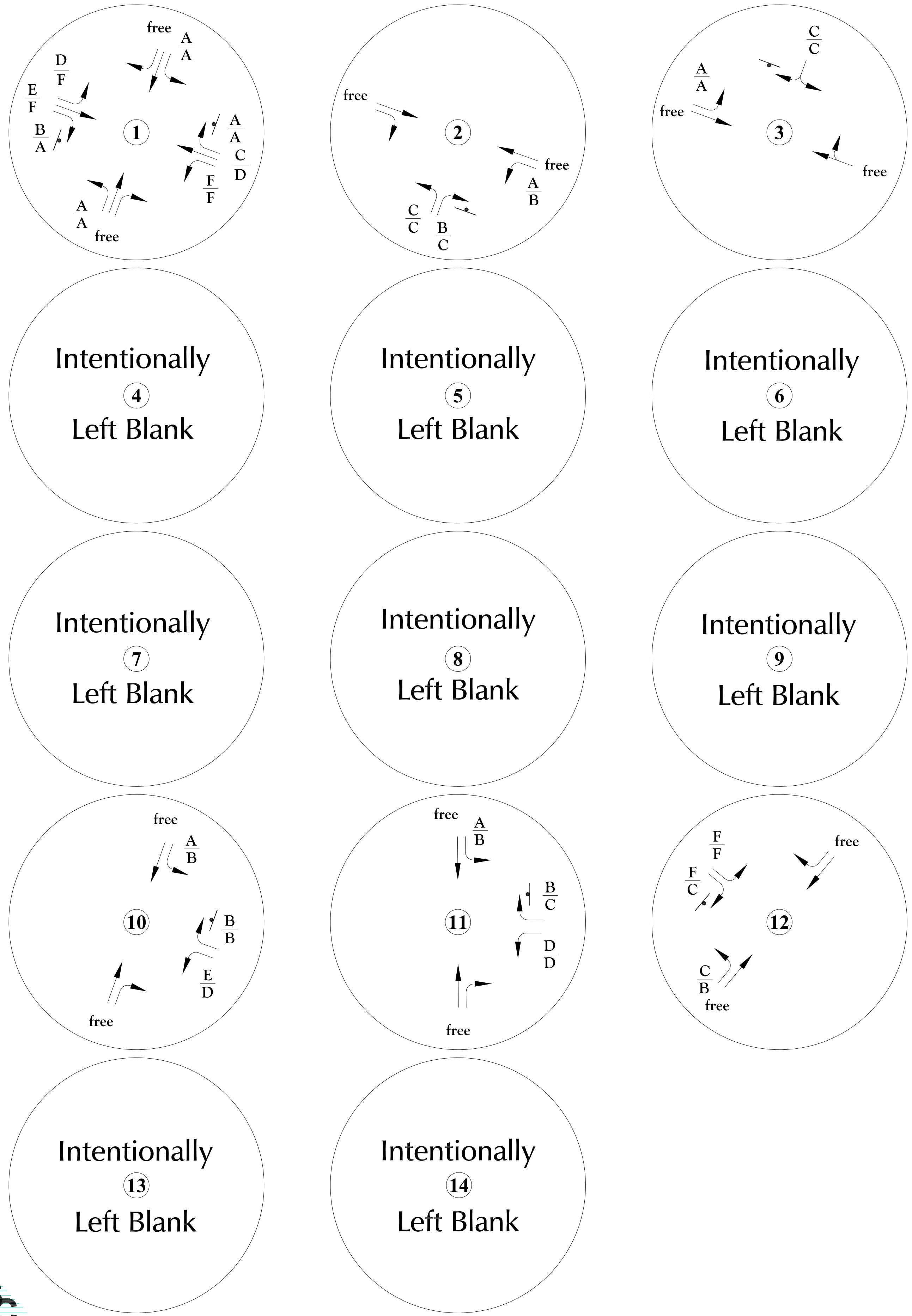
XX/XX = AM Weekday Peak-Hour Traffic (vehicles per hour) / PM Weekday Peak-Hour Traffic (vehicles per hour)

TRANSPORTATION CONSULTANTS, INC.

Figure 12b

2041 Total Traffic on Internal Streets

Grandview Reserve Phase 1 (LSC #S214240)



LEGEND:

Traffic Control Used in the Analysis:

= Stop Sign

= Traffic Signal

LOS Analysis Results:

A/B = AM Individual Movement Peak-Hour Level of Service / PM Individual Movement Peak-Hour Level of Service

C/C = AM Entire Intersection Peak-Hour Level of Service / PM Entire Intersection Peak-Hour Level of Service

N

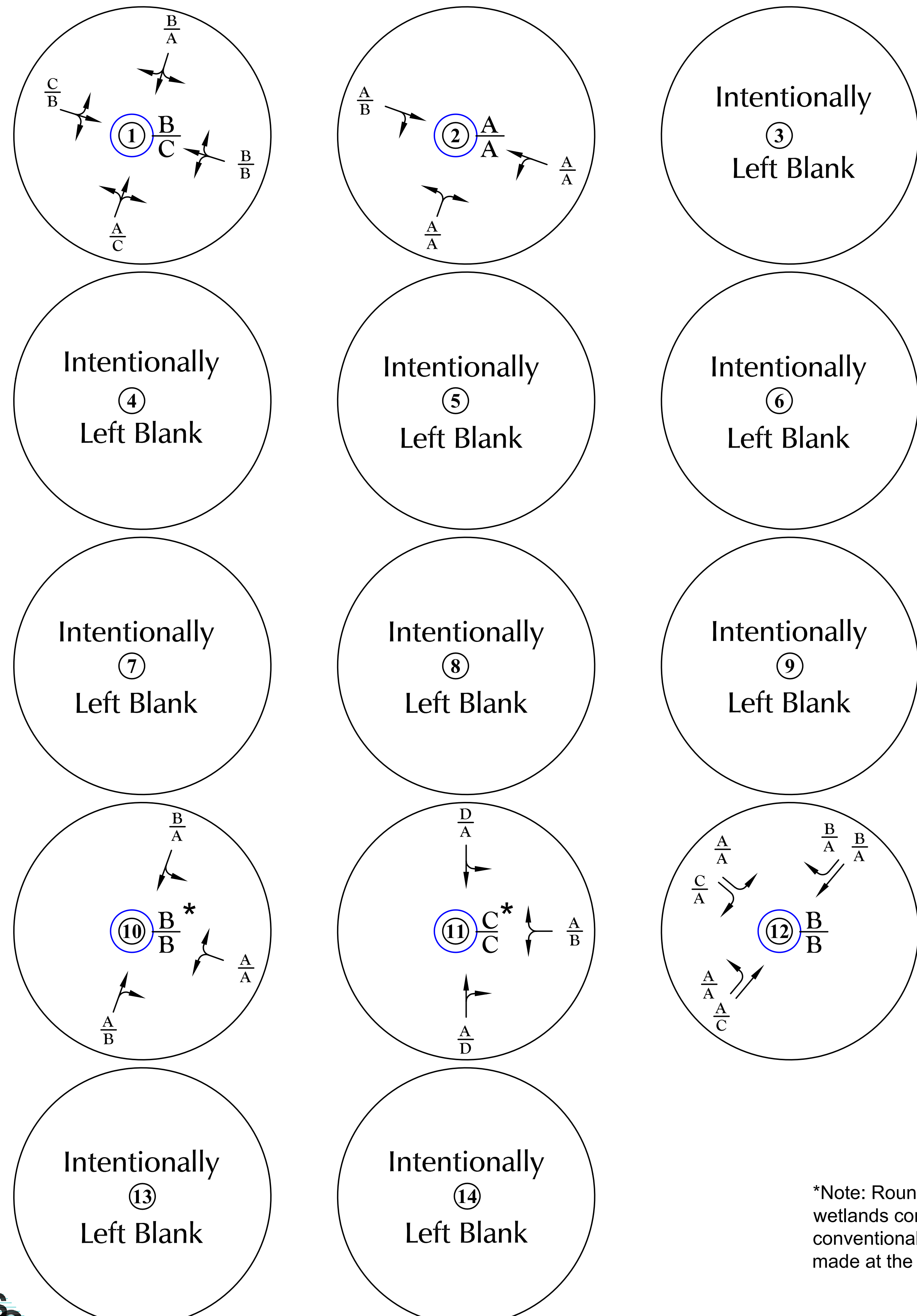
Approximate Scale
Scale: 1" = 4,000'

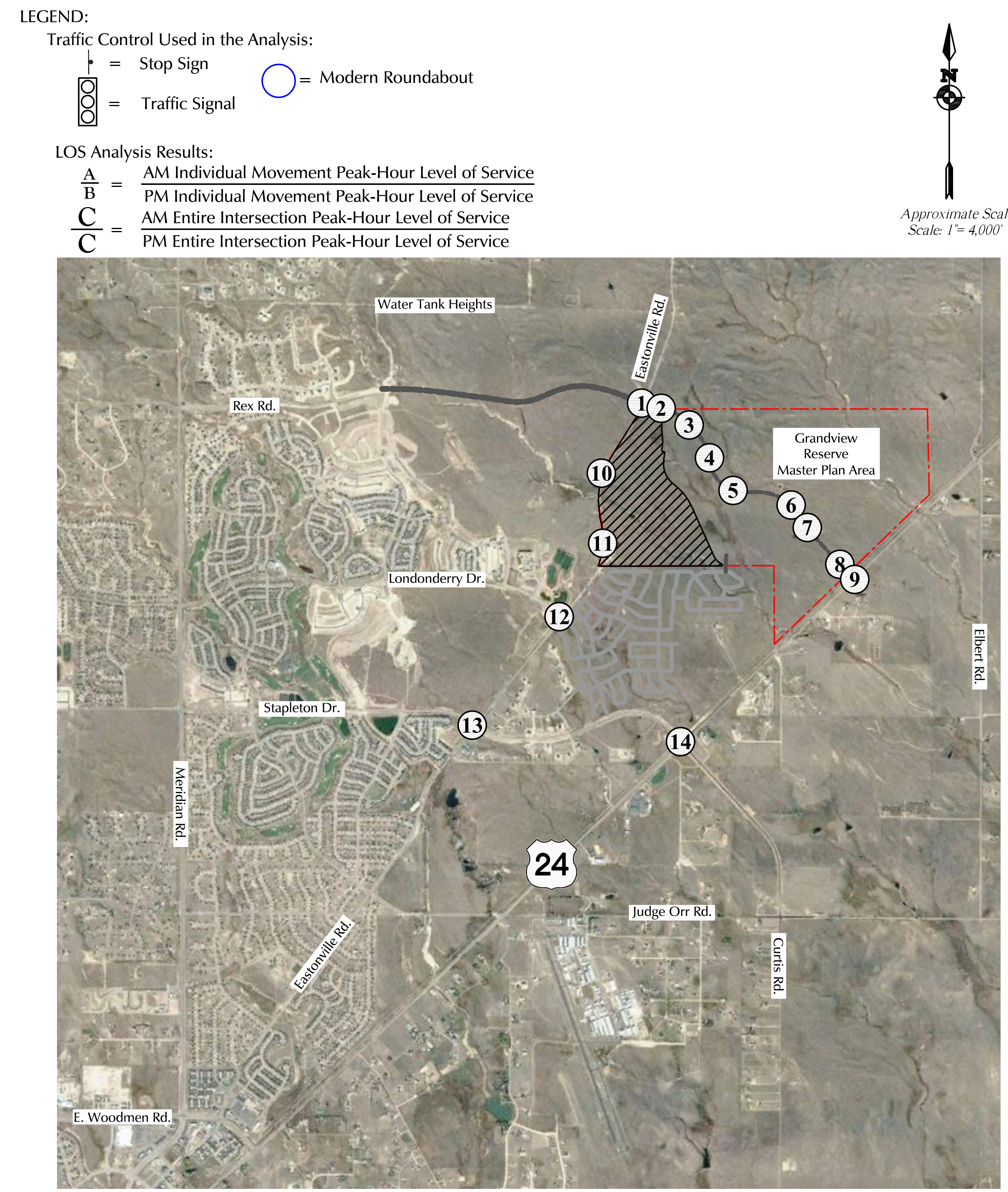
Figure 12c

Year 2040 Total Lane Geometry, Traffic Control and Levels of Service with Two-Way Stop-Sign Control

Grandview Reserve Phase 1 (LSC #S214240)

LSC TRANSPORTATION CONSULTANTS, INC.





*Note: Roundabout analysis shown, however, due to wetlands constraints, the preferred option is a conventional intersection. The determination will be made at the final plat stage.

Figure 12d

Year 2041 Total Lane Geometry, Traffic Control and Levels of Service with Modern Roundabouts

Grandview Reserve Phase 1 (LSC #S214240)

LSC TRANSPORTATION CONSULTANTS, INC.

LEGEND:

Traffic Control Used in the Analysis:

= Stop Sign

= Traffic Signal

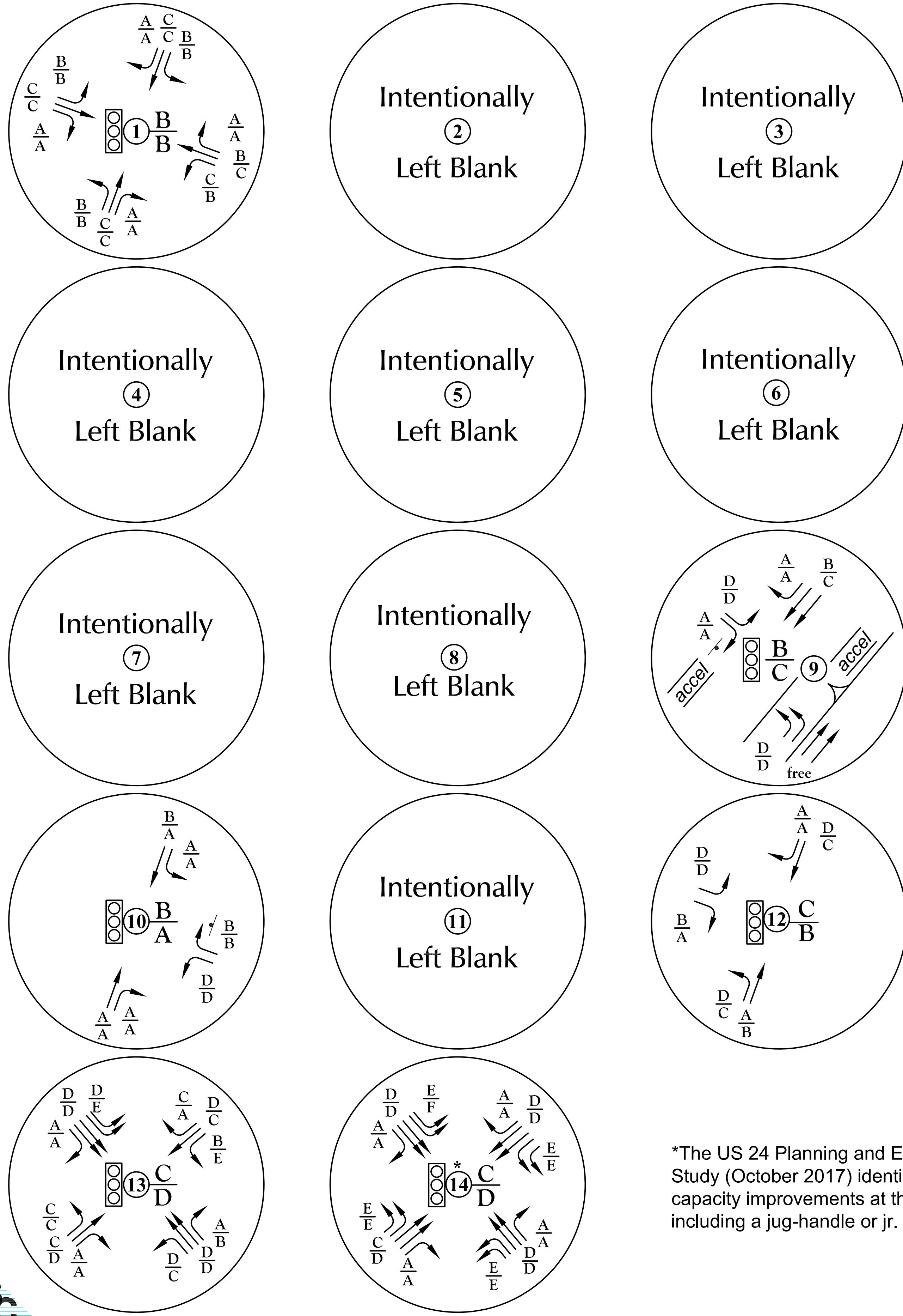
LOS Analysis Results:

A/B = AM Individual Movement Peak-Hour Level of Service / PM Individual Movement Peak-Hour Level of Service

C/C = AM Entire Intersection Peak-Hour Level of Service / PM Entire Intersection Peak-Hour Level of Service

N

Approximate Scale
Scale: 1"= 4,000'



*The US 24 Planning and Environmental Study (October 2017) identifies options for capacity improvements at this intersection, including a jug-handle or jr. interchange.

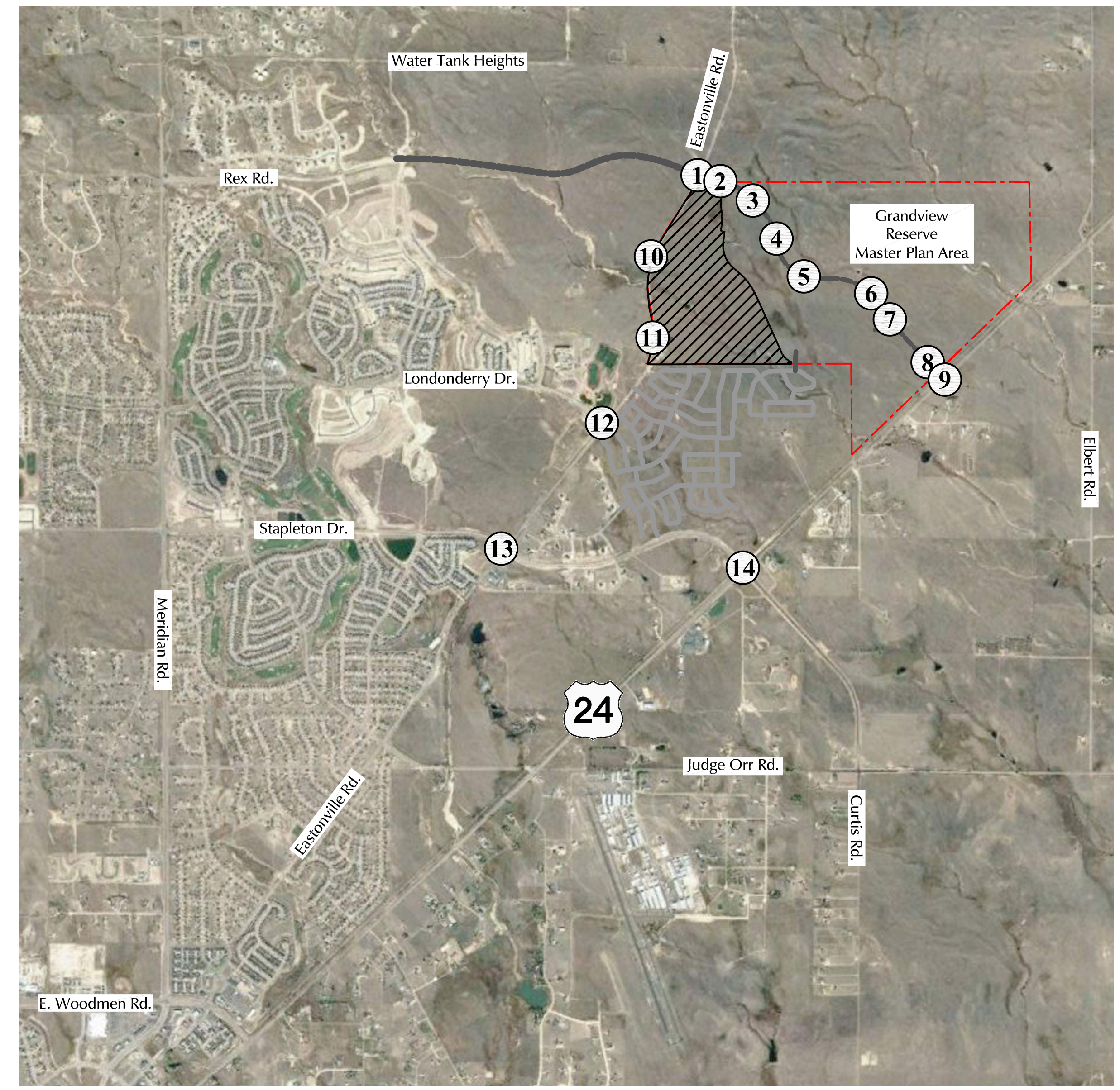


Figure 12e

Year 2041 Total Lane Geometry, Traffic Control and Levels of Service with Traffic Signal Control

Grandview Reserve Phase 1 (LSC #S214240)

LSC TRANSPORTATION CONSULTANTS, INC.

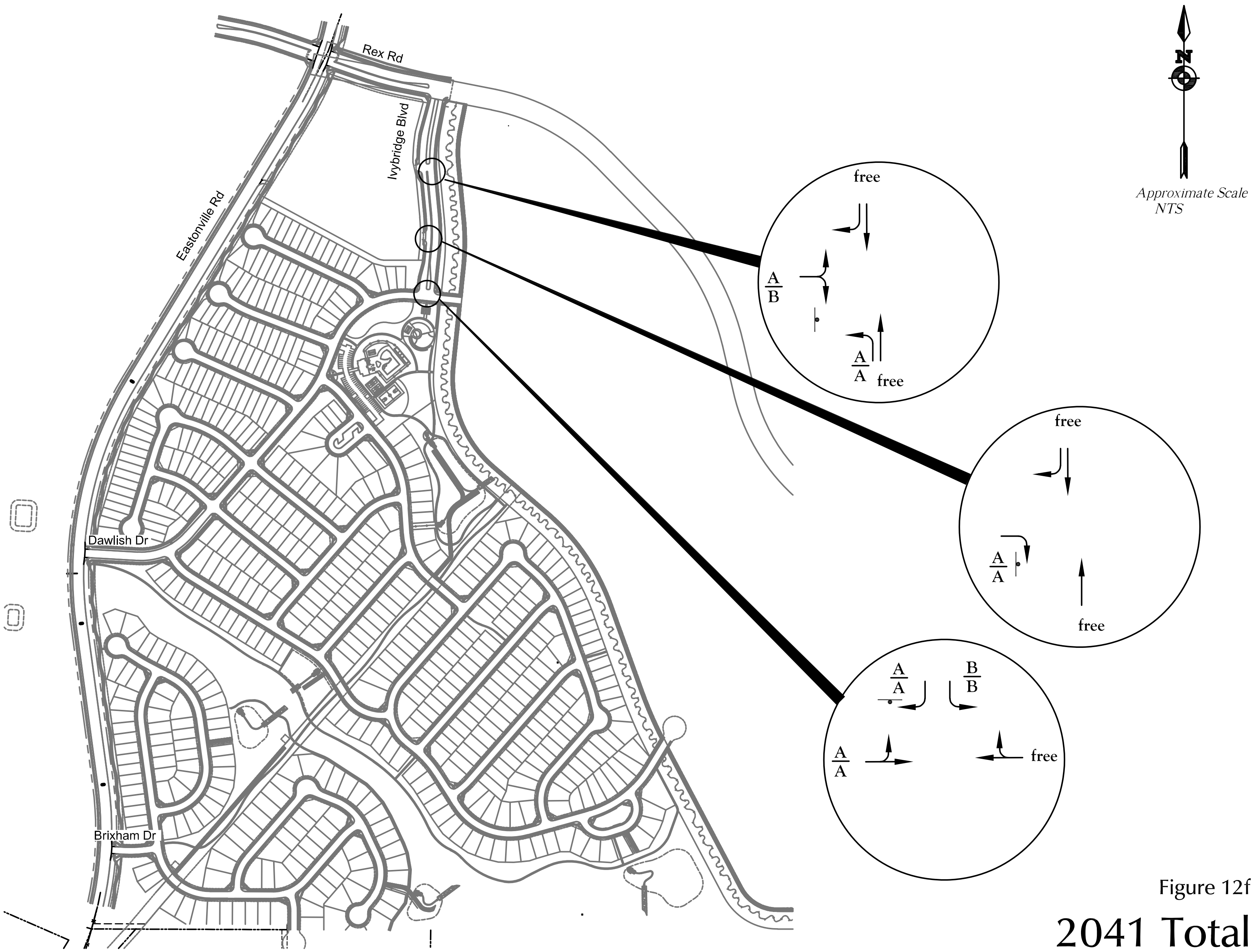


Figure 12f

2041 Total
Ivybridge Blvd Intersection LOS

Grandview Reserve Phase 1 (LSC #S214240)

= Stop Sign

A/B = AM Individual Movement Peak-Hour Level of Service / PM Individual Movement Peak-Hour Level of Service

TRANSPORTATION CONSULTANTS, INC.

Figure 13

Recommended Street Classification

Grandview Reserve Phase 1 (LSC #S214240)

Appendix Tables

TRANSPORTATION
CONSULTANTS, INC.

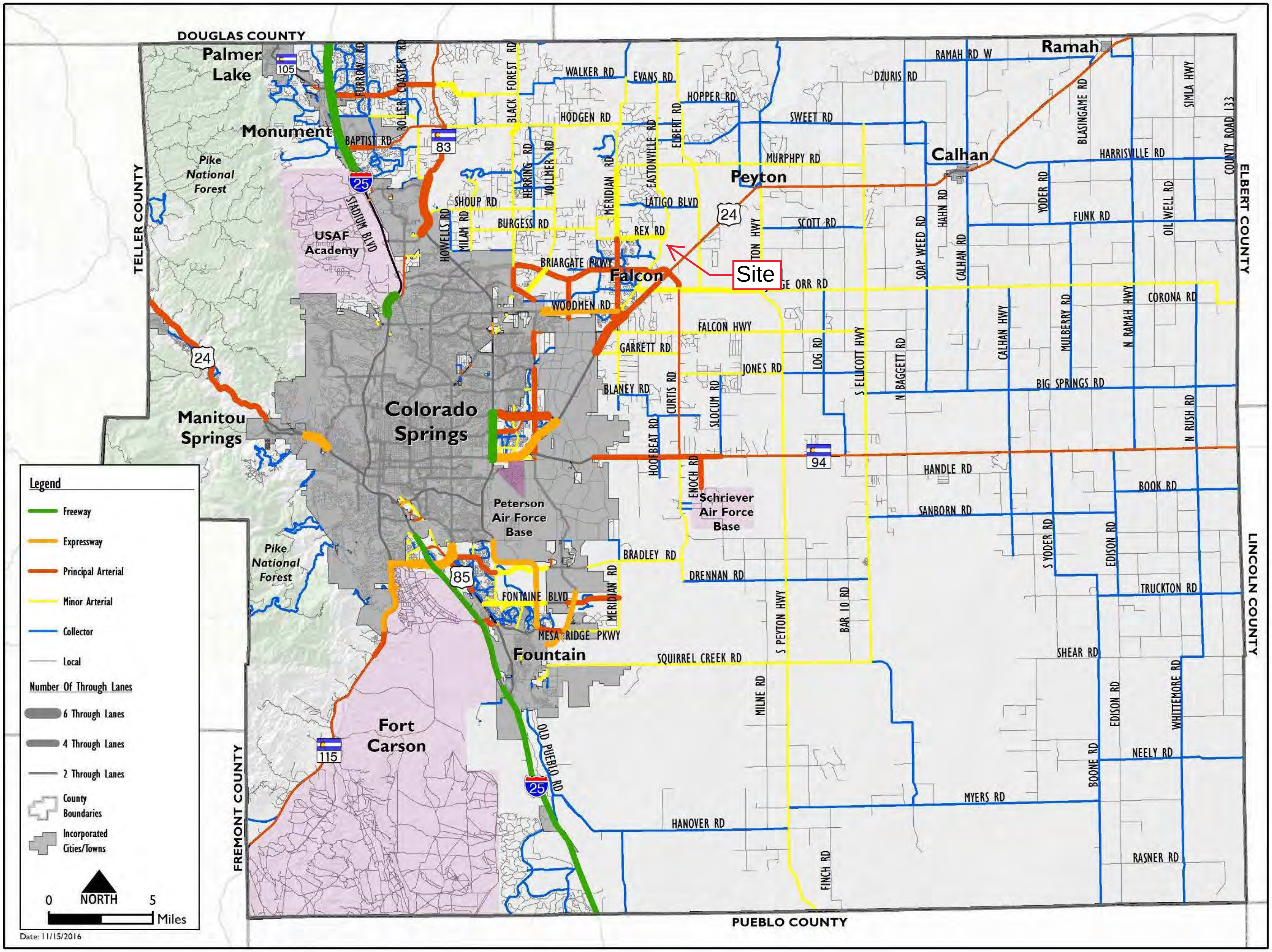
Appendix Table 1
Area Trafffic Impact Studies by LSC
Grandview Reserve Phase 1

Study	Date
Meridian Ranch	
Meridian Ranch Sketch Plan TIA	April 11, 2011
Meridian Ranch Filing 11 Updated TIA	November 26, 2013
Stonebridge at Meridian Ranch Filing No. 1 Updated TIA	April 23, 2014
Stonebridge at Meridian Ranch Transportation Memorandum	July 28, 2015
Meridian Ranch Filing 8 Updated TIA	December 23, 2014
Meridian Ranch Filing 9 Updated TIA	May 21, 2015
Meridian Ranch Sketch Plan 2015 Amendment TIA	July 30, 2015
The Vistas at Meridian Ranch TIA	March 24, 2016
Meridian Ranch Estates Filing No. 2 Transportation Memorandum	August 27, 2015
The Vistas at Meridian Ranch Updated Transportation Memorandum	June 20, 2017
Londonderry Drive Pedestrian Operations and Safety Study	February 8, 2017
Stonebridge Filing 3 at Meridian Ranch Updated TIA	March 20, 2017
Meridian Ranch Sketch Plan 2017 Amendment TIA	October 3, 2017
WindingWalk at Meridian Ranch and The Enclave at Stonebridge at Meridian Ranch Updated Traffic Impact Analysis	May 10, 2018
Rolling Hills Ranch at Meridian Ranch PUDSP Traffic Impact Analysis	June 29, 2020
The Estates at Rolling Hills Ranch Filing No. 1 Traffic Impact Analysis	May 13, 2020
Rolling Hills Ranch at Meridian Ranch Filing No. 1 Traffic Impact Analysis	July 14, 2020
The Estates at Rolling Hills Ranch Filing No. 2 Traffic Impact Study	October 8, 2020
Rolling Hills Ranch at Meridian Ranch Filing No. 2 Transportation Memorandum	December 29, 2020
Rolling Hills Ranch at Meridian Ranch Filing No. 3 Transportation Memorandum	June 29, 2021
Meridian Ranch 2021 Sketch Plan Amendment Traffic Impact Study	June 25, 2021
Grandview Reserve	
Grandview Reserve Updated Master TIA	December 5, 2020
Waterbury/4-Way Ranch	
Waterbury PUD Development Plan Updated TIA	January 10, 2013
Waterbury Filing Nos. 1 and 2 TIA	December 18, 2020
Meadowlake Ranch	
Meadowlake Ranch Traffic Impact Analysis	May 29, 2019
Trails	
Trails Filing Nos. 9, 10 and 11	February 12, 2007

Source: LSC Transportation Consultants, Inc. (July 2021)

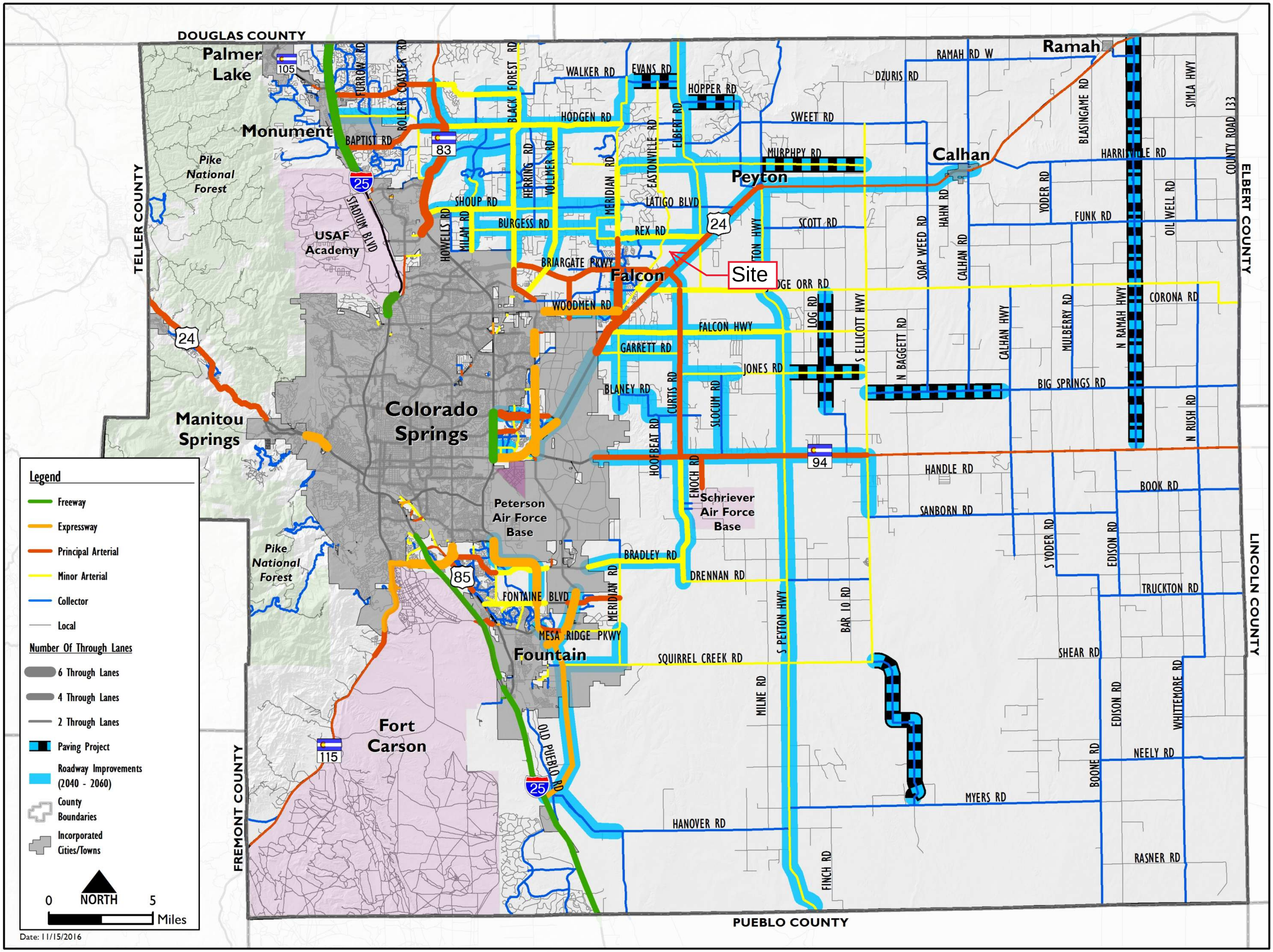
MTCP Maps

LSC
TRANSPORTATION CONSULTANTS, INC.



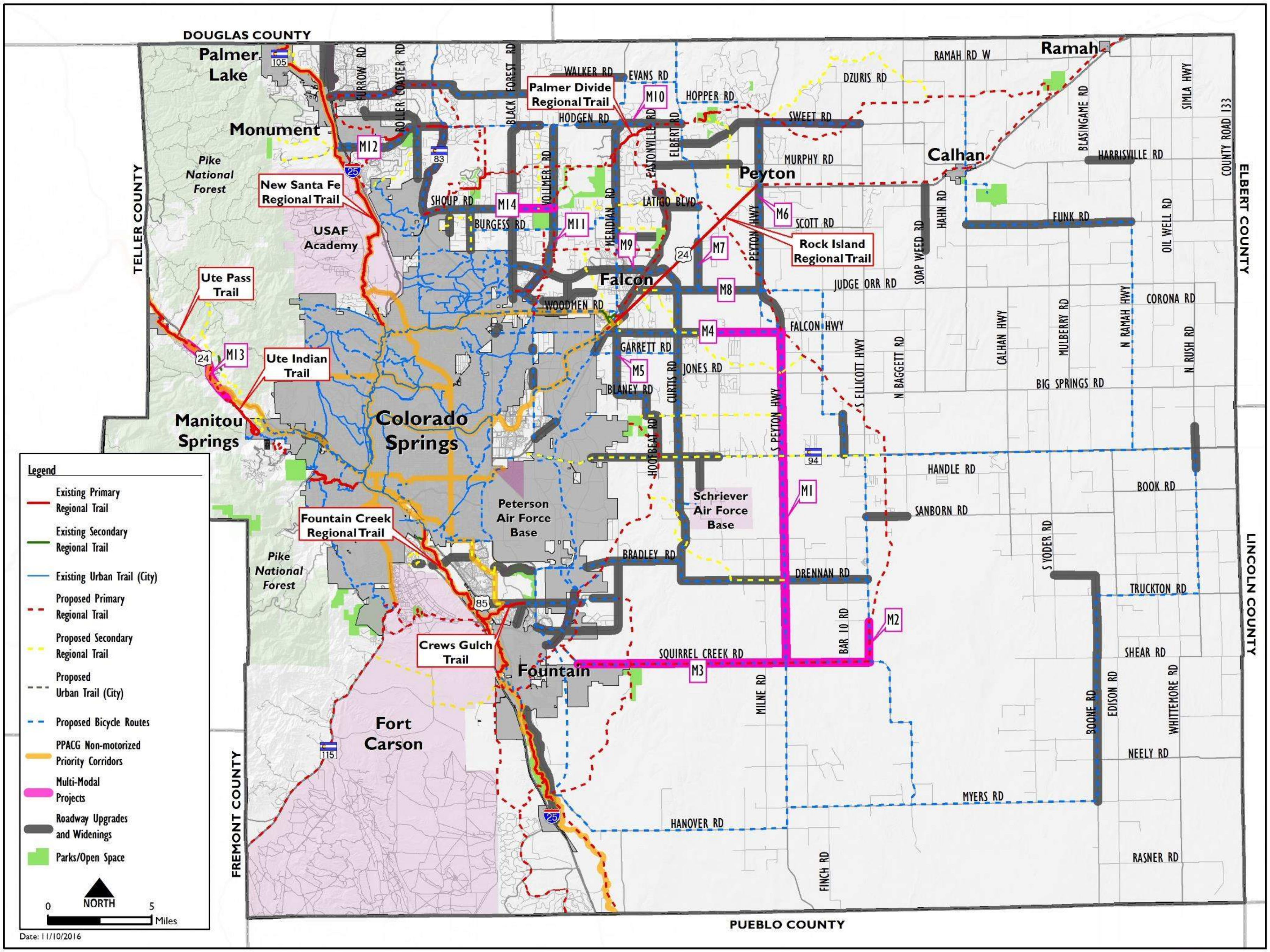
Map 14: 2040 Roadway Plan (Classification and Lanes)

Map 17: 2060 Corridor Preservation



Map 15 Bicycle and Pedestrian Network Improvements

TRANSPORTATION
CONSULTANTS, INC.



Map 15: Bicycle and Pedestrian Network and Improvements

Traffic Counts

LSC
TRANSPORTATION
CONSULTANTS, INC.

LSC Transportation Consultants, Inc.
545 E Pikes Peak Ave, Suite 210
Colorado Springs, CO 80905
719-633-2868

File Name : Eastonville Rd - Stapleton Rd AM
Site Code : S214870
Start Date : 10/7/2021
Page No : 1

Groups Printed- Unshifted

	Eastonville Rd Southbound					Stapleton Rd Westbound					Eastonville Rd Northbound					Stapleton Rd Eastbound					
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
06:30 AM	29	8	0	0	37	0	18	8	0	26	2	14	0	0	16	3	32	2	0	37	116
06:45 AM	36	19	2	0	57	0	11	20	0	31	5	18	1	0	24	5	51	8	0	64	176
Total	65	27	2	0	94	0	29	28	0	57	7	32	1	0	40	8	83	10	0	101	292
07:00 AM	31	36	6	0	73	0	16	43	0	59	13	76	2	0	91	2	27	6	0	35	258
07:15 AM	48	67	4	0	119	3	25	34	0	62	33	69	3	0	105	3	36	13	0	52	338
07:30 AM	24	31	2	0	57	3	42	13	0	58	32	24	11	0	67	2	45	15	0	62	244
07:45 AM	15	17	0	0	32	0	20	8	0	28	16	14	1	1	32	0	36	15	0	51	143
Total	118	151	12	0	281	6	103	98	0	207	94	183	17	1	295	7	144	49	0	200	983
08:00 AM	11	14	1	1	27	2	20	11	0	33	8	10	1	0	19	1	24	12	0	37	116
08:15 AM	23	10	0	1	34	1	18	12	0	31	18	9	0	0	27	2	12	11	0	25	117
08:30 AM	12	8	2	0	22	0	18	6	0	24	4	6	2	0	12	3	21	3	0	27	85
Grand Total	229	210	17	2	458	9	188	155	0	352	131	240	21	1	393	21	284	85	0	390	1593
Apprch %	50	45.9	3.7	0.4		2.6	53.4	44	0		33.3	61.1	5.3	0.3		5.4	72.8	21.8	0		
Total %	14.4	13.2	1.1	0.1	28.8	0.6	11.8	9.7	0	22.1	8.2	15.1	1.3	0.1	24.7	1.3	17.8	5.3	0	24.5	

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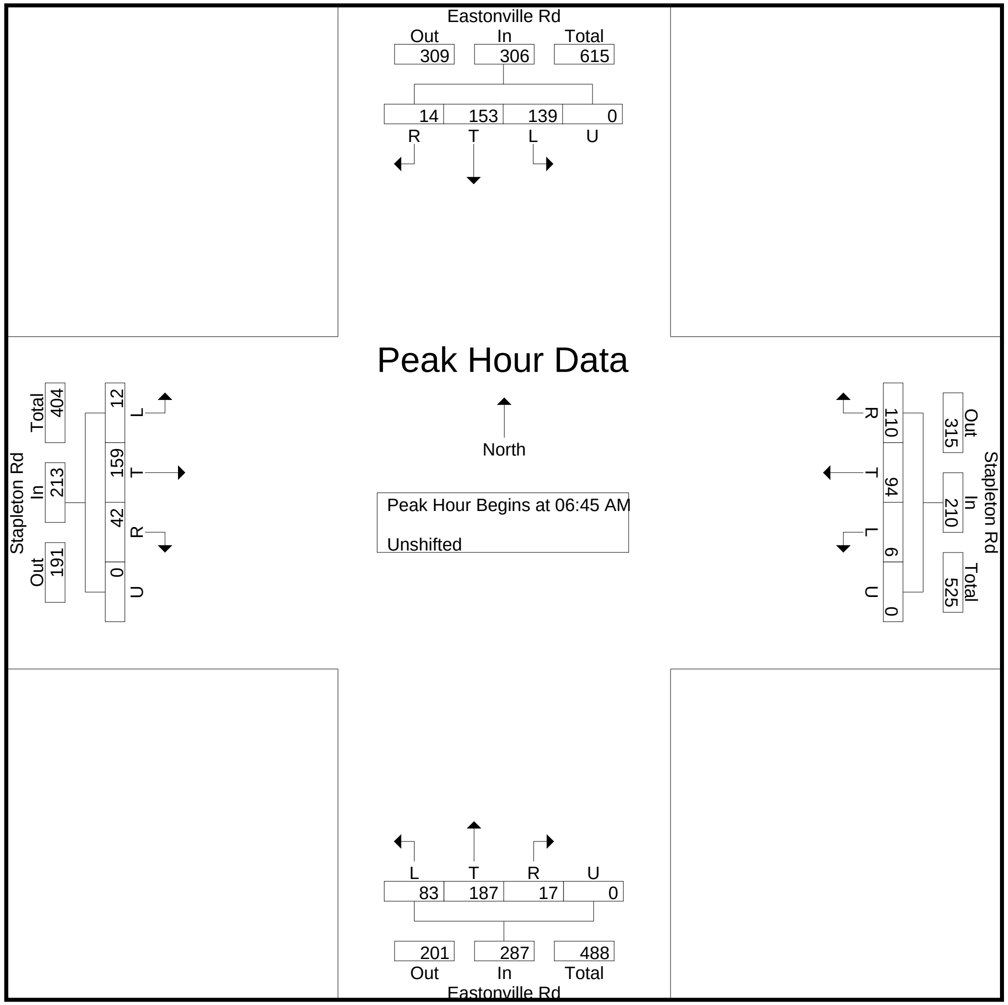
545 E Pikes Peak Ave, Suite 210
Colorado Springs, CO 80905
719-633-2868

File Name : Eastonville Rd - Stapleton Rd AM
Site Code : S214870
Start Date : 10/7/2021
Page No : 3



LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210
Colorado Springs, CO 80905
719-633-2868

File Name : Eastonville Rd - Stapleton Rd PM
Site Code : S214870
Start Date : 10/7/2021
Page No : 1

Groups Printed- Unshifted

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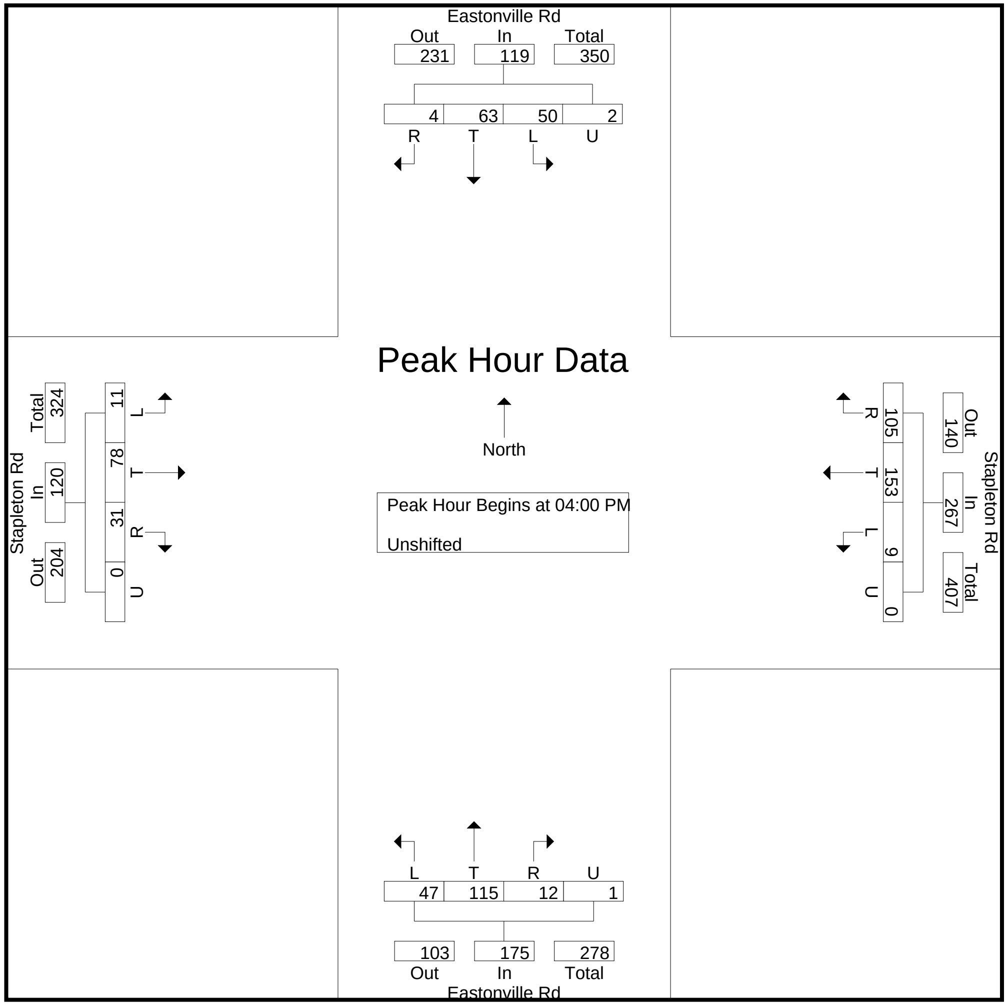
Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
04:00 PM	9	15	2	0	26	1	42	25	0	68	11	23	3	0	37	1	25	8	0	34	165
04:15 PM	9	20	0	2	31	6	38	27	0	71	6	25	5	0	36	3	23	9	0	35	173
04:30 PM	11	12	0	0	23	1	39	31	0	71	17	40	2	1	60	2	16	8	0	26	180
04:45 PM	21	16	2	0	39	1	34	22	0	57	13	27	2	0	42	5	14	6	0	25	163
Total	50	63	4	2	119	9	153	105	0	267	47	115	12	1	175	11	78	31	0	120	681
05:00 PM	13	27	2	0	42	3	40	18	0	61	5	24	4	0	33	4	18	3	0	25	161
05:15 PM	11	27	2	0	40	2	28	29	0	59	11	25	2	0	38	2	21	3	0	26	163
05:30 PM	14	19	2	0	35	4	30	15	0	49	11	30	2	0	43	0	26	8	0	34	161
05:45 PM	14	15	1	0	30	3	32	13	0	48	10	32	0	0	42	3	26	5	0	34	154
Total	52	88	7	0	147	12	130	75	0	217	37	111	8	0	156	9	91	19	0	119	639
06:00 PM	12	23	5	0	40	2	31	19	0	52	9	22	3	0	34	5	15	1	0	21	147
Grand Total	114	174	16	2	306	23	314	199	0	536	93	248	23	1	365	25	184	51	0	260	1467
Apprch %	37.3	56.9	5.2	0.7		4.3	58.6	37.1	0		25.5	67.9	6.3	0.3		9.6	70.8	19.6	0		
Total %	7.8	11.9	1.1	0.1	20.9	1.6	21.4	13.6	0	36.5	6.3	16.9	1.6	0.1	24.9	1.7	12.5	3.5	0	17.7	

LSC Transportation Consultants, Inc.
545 E Pikes Peak Ave, Suite 210
Colorado Springs, CO 80905
719-633-2868

File Name : Eastonville Rd - Stapleton Rd PM
Site Code : S214870
Start Date : 10/7/2021
Page No : 3



LSC Transportation Consultants, Inc.
545 E Pikes Peak Ave, Suite 210
Colorado Springs, CO 80905
719-633-2868

File Name : Hwy 24 - Stapleton Rd AM
Site Code : S214740
Start Date : 10/6/2021

Groups Printed- Unshifted

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Start Time	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	L	T	R	U	App. Total	Int. Total
06:30 AM	6	101	2	0	109	0	7	3	0	10	11	79	0	0	90	6	44	20	0	70	279
06:45 AM	8	112	3	0	123	2	12	2	0	16	24	77	1	0	102	6	32	36	1	75	316
Total	14	213	5	0	232	2	19	5	0	26	35	156	1	0	192	12	76	56	1	145	595
07:00 AM	9	98	8	0	115	1	27	4	0	32	17	71	1	0	89	16	41	32	1	90	326
07:15 AM	16	105	19	0	140	1	29	6	0	36	22	64	3	0	89	7	46	46	0	99	364
07:30 AM	12	111	7	0	130	0	18	5	0	23	14	42	0	0	56	4	38	32	0	74	283
07:45 AM	6	71	7	0	84	1	11	3	0	15	12	62	1	0	75	8	23	19	0	50	224
Total	43	385	41	0	469	3	85	18	0	106	65	239	5	0	309	35	148	129	1	313	1197
08:00 AM	4	95	8	0	107	0	9	3	0	12	18	59	3	0	80	1	22	15	0	38	237
08:15 AM	3	105	4	0	112	0	8	3	0	11	13	48	1	0	62	1	15	20	0	36	221
08:30 AM	4	44	4	0	52	4	4	2	0	10	4	43	0	0	47	8	9	7	0	24	133
Grand Total	68	842	62	0	972	9	125	31	0	165	135	545	10	0	690	57	270	227	2	556	2383
Apprch %	7	86.6	6.4	0		5.5	75.8	18.8	0		19.6	79	1.4	0		10.3	48.6	40.8	0.4		
Total %	2.9	35.3	2.6	0	40.8	0.4	5.2	1.3	0	6.9	5.7	22.9	0.4	0	29	2.4	11.3	9.5	0.1	23.3	

LSC Transportation Consultants, Inc.

545 E Pikes Peak Ave, Suite 210
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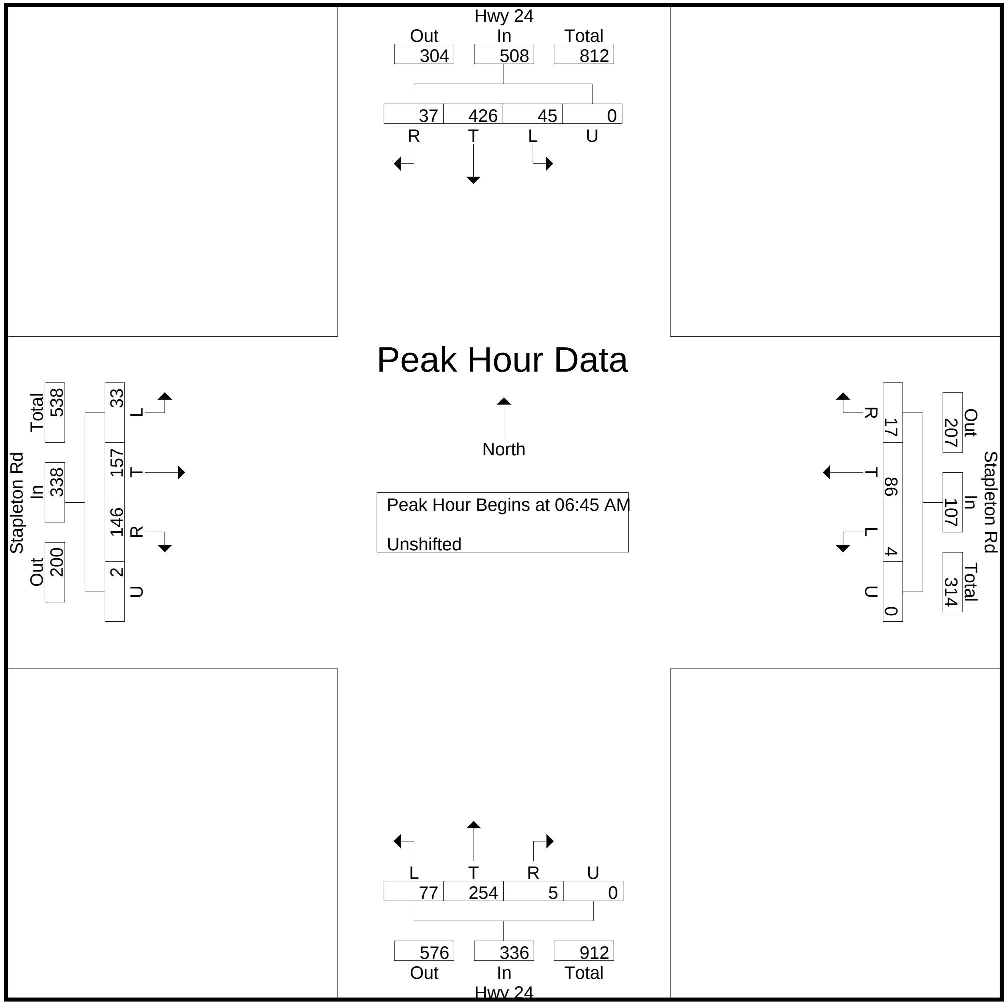
719-633-2868

File Name : Hwy 24 - Stapleton Rd AM
Site Code : S214740
Start Date : 10/6/2021
Page No : 3



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719-633-2868

File Name : Hwy 24 - Stapleton Rd PM
Site Code : S214740
Start Date : 10/6/2021

Groups Printed- Unshifted

	Hwy 24 Southbound					Stapleton Rd Westbound					Hwy 24 Northbound					Stapleton Rd Eastbound					
Start Time	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**Int. Total**
04:00 PM	2	100	10	0	112	2	27	6	0	35	32	115	2	0	149	3	11	20	0	34	330
04:15 PM	4	98	11	0	113	1	35	12	0	48	26	109	4	0	139	3	15	15	0	33	333
04:30 PM	2	101	3	0	106	2	27	9	0	38	28	124	1	0	153	5	15	16	0	36	333
04:45 PM	2	71	5	0	78	0	35	7	0	42	34	120	1	0	155	7	8	16	0	31	306
Total	10	370	29	0	409	5	124	34	0	163	120	468	8	0	596	18	49	67	0	134	1302
05:00 PM	0	73	12	0	85	0	25	7	0	32	26	112	10	0	148	5	9	24	0	38	303
05:15 PM	1	80	9	0	90	2	18	6	0	26	37	122	3	0	162	4	14	20	0	38	316
05:30 PM	6	82	6	0	94	1	26	6	0	33	29	121	4	0	154	5	9	20	0	34	315
05:45 PM	1	73	3	1	78	3	22	7	1	33	25	107	3	0	135	10	19	4	1	34	280
Total	8	308	30	1	347	6	91	26	1	124	117	462	20	0	599	24	51	68	1	144	1214
06:00 PM	3	87	2	0	92	2	18	5	0	25	18	108	9	0	135	5	8	24	0	37	289
Grand Total	21	765	61	1	848	13	233	65	1	312	255	1038	37	0	1330	47	108	159	1	315	2805
Apprch %	2.5	90.2	7.2	0.1		4.2	74.7	20.8	0.3		19.2	78	2.8	0		14.9	34.3	50.5	0.3		
Total %	0.7	27.3	2.2	0	30.2	0.5	8.3	2.3	0	11.1	9.1	37	1.3	0	47.4	1.7	3.9	5.7	0	11.2	

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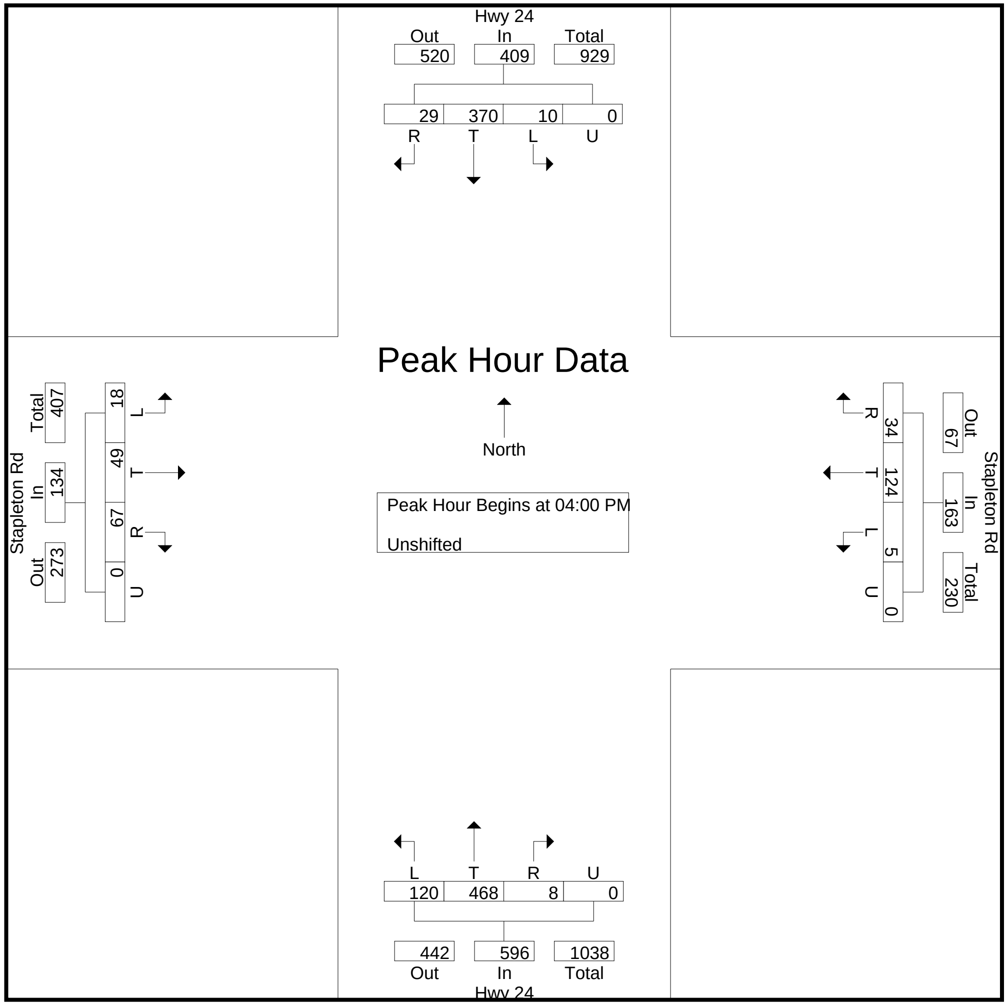
File Name : Hwy 24 - Stapleton Rd PM
Site Code : S214740
Start Date : 10/6/2021
Page No : 3



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545 E Pikes Peak Ave, Suite 210
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719-633-2868

File Name : Eastonville Rd -Londonderry Dr AM
Site Code : S214250
Start Date : 4/15/2021

Groups Printed- Unshifted

	Eastonville Rd Southbound					Westbound					Eastonville Rd Northbound					Londonderry Dr Eastbound					
Start Time	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**Int. Total**
07:00 AM	0	2	2	0	4	0	0	0	0	0	44	2	0	0	46	0	0	31	0	31	81
07:15 AM	0	2	3	0	5	0	0	0	0	0	96	1	0	0	97	0	0	74	0	74	176
07:30 AM	0	2	2	0	4	0	0	0	0	0	22	2	0	0	24	0	0	54	0	54	82
07:45 AM	0	3	2	0	5	0	0	0	0	0	28	1	0	0	29	3	0	37	1	41	75
Total	0	9	9	0	18	0	0	0	0	0	190	6	0	0	196	3	0	196	1	200	414
08:00 AM	0	1	5	0	6	0	0	0	0	0	24	1	0	0	25	0	0	18	0	18	49
08:15 AM	0	0	2	0	2	0	0	0	0	0	24	2	0	0	26	2	0	37	1	40	68
08:30 AM	0	1	0	0	1	0	0	0	0	0	13	1	0	0	14	2	0	23	0	25	40
08:45 AM	0	7	2	0	9	0	0	0	0	0	13	5	0	0	18	0	0	12	0	12	39
Total	0	9	9	0	18	0	0	0	0	0	74	9	0	0	83	4	0	90	1	95	196
Grand Total	0	18	18	0	36	0	0	0	0	0	264	15	0	0	279	7	0	286	2	295	610
Apprch %	0	50	50	0		0	0	0	0		94.6	5.4	0	0		2.4	0	96.9	0.7		
Total %	0	3	3	0	5.9	0	0	0	0	0	43.3	2.5	0	0	45.7	1.1	0	46.9	0.3	48.4	

LSC Transportation Consultants, Inc.
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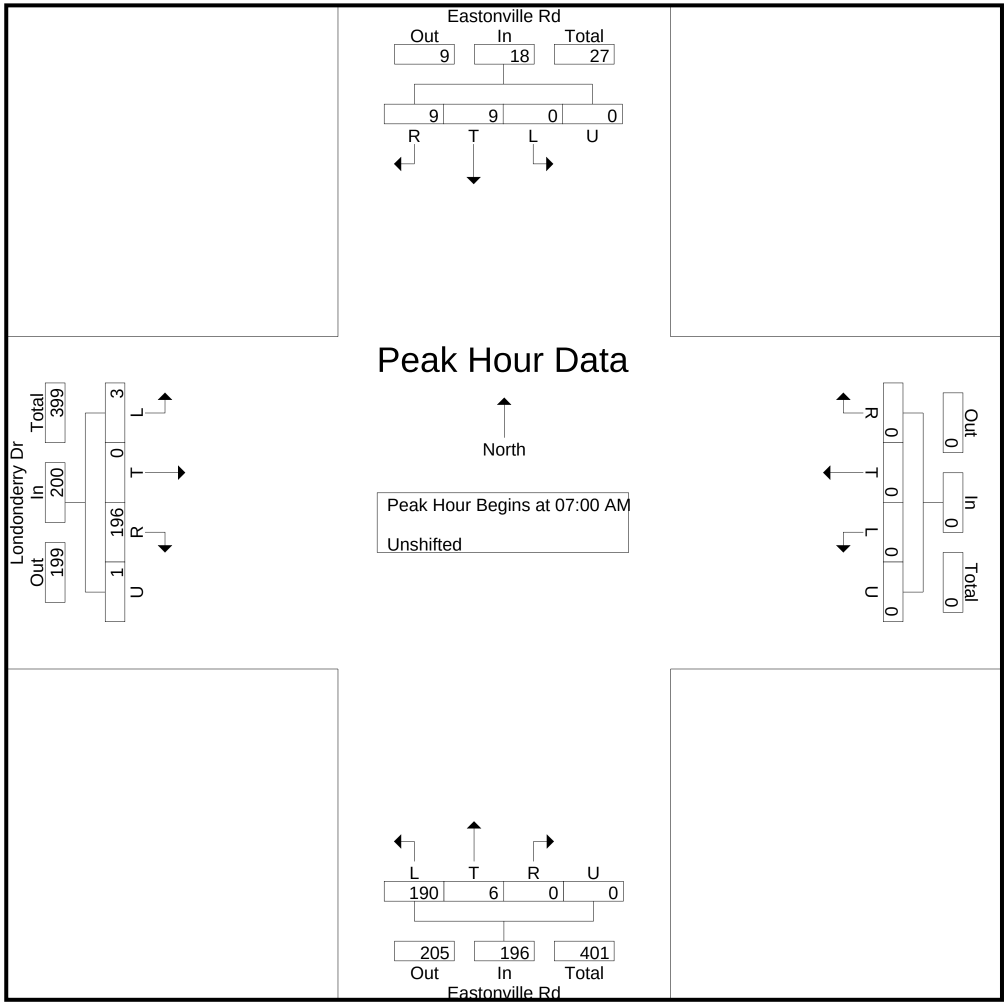
File Name : Eastonville Rd -Londonderry Dr AM
Site Code : S214250
Start Date : 4/15/2021
Page No : 3



LSC Transportation Consultants, Inc.
545 E Pikes Peak Ave, Suite 210
Colorado Springs, CO 80905
719-633-2868

File Name : Eastonville Rd -Londonderry Dr PM
Site Code : S214250
Start Date : 4/15/2021

Groups Printed- Unshifted

	Eastonville Rd Southbound					Westbound					Eastonville Rd Northbound					Londonderry Dr Eastbound					
Start Time	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**L**	**T**	**R**	**U**	**App. Total**	**Int. Total**
04:00 PM	0	2	1	0	3	0	0	0	0	0	47	1	0	0	48	2	0	27	0	29	80
04:15 PM	0	1	0	0	1	0	0	0	0	0	36	3	0	0	39	2	0	19	0	21	61
04:30 PM	0	1	1	0	2	0	0	0	0	0	40	2	0	0	42	0	0	15	0	15	59
04:45 PM	0	1	1	0	2	0	0	0	0	0	36	7	0	0	43	2	0	13	0	15	60
Total	0	5	3	0	8	0	0	0	0	0	159	13	0	0	172	6	0	74	0	80	260
05:00 PM	0	2	2	0	4	0	0	0	0	0	36	1	0	0	37	0	0	12	0	12	53
05:15 PM	0	4	0	0	4	0	0	0	0	0	31	1	0	0	32	1	0	8	0	9	45
05:30 PM	0	1	0	0	1	0	0	0	0	0	35	3	0	1	39	0	0	7	0	7	47
05:45 PM	0	2	0	0	2	0	0	0	0	0	24	2	0	0	26	0	0	15	0	15	43
Total	0	9	2	0	11	0	0	0	0	0	126	7	0	1	134	1	0	42	0	43	188
Grand Total	0	14	5	0	19	0	0	0	0	0	285	20	0	1	306	7	0	116	0	123	448
Apprch %	0	73.7	26.3	0		0	0	0	0		93.1	6.5	0	0.3		5.7	0	94.3	0		
Total %	0	3.1	1.1	0	4.2	0	0	0	0	0	63.6	4.5	0	0.2	68.3	1.6	0	25.9	0	27.5	

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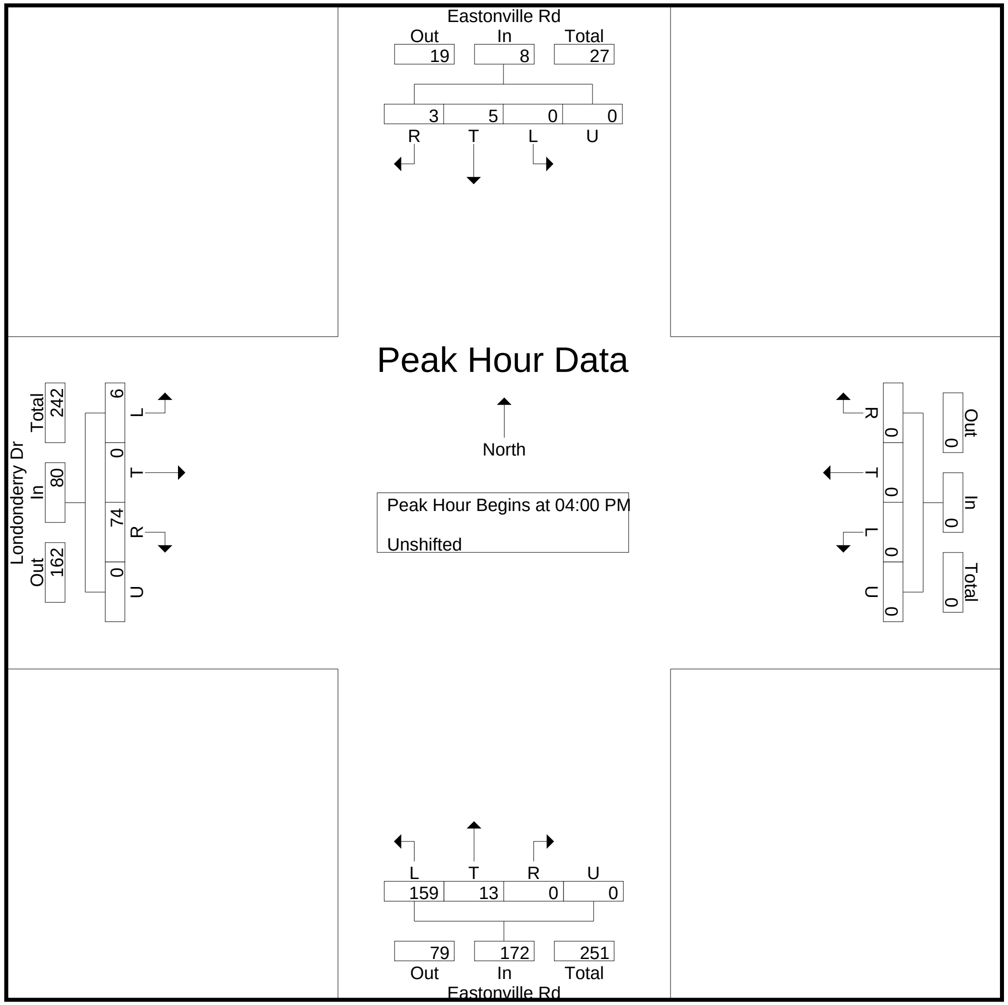
File Name : Eastonville Rd -Londonderry Dr PM
Site Code : S214250
Start Date : 4/15/2021
Page No : 3



Crash History

TRANSPORTATION
CONSULTANTS, INC.

Accident Date	Total Vehicles	Location Road Name	FIP	Reference Point At Name	Road Surface Code	Lighting Condition Code	Adverse Weather Condition Code	AccidentNarrative
5/8/2019	1	EASTONVILLE	Property		05	04	00	Vehicle 1 was southbound in a parking lot at 10990 Eastonville Rd [Falcon Regional Park]. Vehicle 1 attempted to turn at a high rate of speed. While turning, vehicle 1 lost traction and began to rotate counter clockwise. Vehicle 1 then collided its front with a concrete base for a utility box. Vehicle 1 came to a rest facing northeast in the parking lot.
11/4/2021	1	EASTONVILLE	Property		05	04		Vehicle #1 was traveling northbound on Eastonville road approaching a left turn. Vehicle #1 lost control on the dirt road and rotated counterclockwise before rolling 3/4 time, then coming to rest on its left side off the left side of the roadway facing south.
2/15/2019	1	EASTONVILLE	Property	LONDONDERRY DR	05	01	05	Vehicle #1 was traveling southbound on Eastonville Road. Vehicle #1 lost control and ran off the right side of the road after rotating 1/4 turn clockwise. Vehicle #1 rolled 1/2 time and came to final rest on its top facing north.
1/20/2022	1	EASTONVILLE	Property	LONDONDERRY DR	05	01		Vehicle #1 was traveling northbound on Eastonville Road. Vehicle #1 traveled off the right side of the roadway and collided its front with a fence. After impact, vehicle #1 began to rotate counterclockwise and rolled an undetermined amount of rolls. Vehicle #1 then came to final rest on its left side, facing south.
4/29/2019	2	EASTONVILLE	Property	STAPLETON DR	02	01	00	Vehicle 1 was southbound on Eastonville Road. Vehicle 2 was southbound on Eastonville Road ahead of Vehicle 1. Traffic ahead stopped abruptly. Vehicle 2 slowed. Vehicle 1 slowed and struck Vehicle 2, on its rear, with its front. Both vehicles were moved from the scene prior to officer arrival.
1/14/2020	2	EASTONVILLE	Property	STAPLETON DR	02	04	00	Vehicle #1 was eastbound on Stapleton Dr, stopped at the stop sign at Eastonville Rd. Vehicle #2 was southbound on Eastonville Rd approaching the intersection at Stapleton Dr. Vehicle #1 proceeded into the intersection. Vehicle #2 attempted to brake and steer to the left to avoid the collision. The front of vehicle #2 collided with the left side of vehicle #1 in the intersection.
8/7/2020	2	EASTONVILLE	Property	STAPLETON DR	02	01	00	Vehicle #1 was northbound on Stapleton Road stopped at the intersection for Eastonville Road. Vehicle #2 was westbound on Eastonville Road approaching the intersection with Stapleton Road. Vehicle #1 failed to yield the right of way to through traffic and pulled into the intersection and collided with the side of Vehicle #2. Both vehicles were moved from final rest prior to my investigation.
10/22/2020	2	EASTONVILLE	Property	STAPLETON DR	02	01	05	Vehicle 1 was northbound on Eastonville road in the left turn lane to go westbound on Stapleton drive; Vehicle 2 was southbound on Eastonville in the through lane; Vehicle 3 was stopped at the stop sign facing East on Stapleton drive. Vehicle 1 began to make a left turn to go westbound on Stapleton drive, Vehicle 2 swerved to the right to avoid a collision with Vehicle 1 and collided with its front into the side of Vehicle 3. Vehicles 1 and 2 moved to a dirt lot prior to the investigation, Vehicle 3 came to rest on the roadway facing East on Stapleton drive.
1/29/2021	2	EASTONVILLE	Property	STAPLETON DR	02	04	00	Vehicle 1 was westbound on Stapleton Drive at the stop sign of Eastonville Road. Vehicle 2 was southbound on Eastonville Drive approaching the intersection. The intersection has a stop sign for eastbound and westbound traffic on Stapleton Drive. Vehicle 1 proceeded from the stop sign into the intersection. The front end of Vehicle 2 collided with the right side of Vehicle 1 in the intersection. Both vehicles were moved prior to investigation.
5/7/2021	2	EASTONVILLE	Injury	STAPLETON DR	02	01	00	Vehicle 1 was westbound on Stapleton Dr at Eastonville Rd. Vehicle 2 was southbound on Eastonville Rd at Stapleton Dr. Vehicle 1 failed to yield right of way and proceeded from a stop sign. Vehicle 1 collided its front with the side of vehicle 2. Both vehicles were moved prior to investigation.
12/17/2021	2	EASTONVILLE	Property	STAPLETON DR	02	01		Vehicle 1 was westbound on Stapleton Dr at Eastonville Rd. Vehicle 2 was northbound on Eastonville Rd at Stapleton Dr. Vehicle 1 failed to stop at a stop sign and entered the intersection. Vehicle 1 collided its front with the side of vehicle 2. Both vehicles were moved prior to investigation.
2/3/2022	2	EASTONVILLE	Property	STAPLETON DR	02	01		Vehicle 1 was westbound on Stapleton Dr at Eastonville Rd. Vehicle 2 was northbound on Eastonville Rd at Stapleton Dr. Vehicle 1 failed to stop at a stop sign and entered the intersection in front of vehicle 2. Vehicle 2 collided its front with the side of vehicle 1. Vehicle 2 began to rotate counter clockwise and collided its side with the side of vehicle 1's trailer. Vehicle 2 came to a rest facing south blocking the eastbound lane of Stapleton Dr. Vehicle 1 left the scene prior to investigation.

Levels of Service

TRANSPORTATION
CONSULTANTS, INC.

Intersection	
Int Delay, s/veh	9.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	297	303	6	9	9
Future Vol, veh/h	3	297	303	6	9	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	51	51	90	90
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	4	443	594	12	10	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1215	15	20	0	-	0
Stage 1	15	-	-	-	-	-
Stage 2	1200	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	200	1065	1596	-	-	-
Stage 1	1008	-	-	-	-	-
Stage 2	285	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	125	1065	1596	-	-	-
Mov Cap-2 Maneuver	125	-	-	-	-	-
Stage 1	630	-	-	-	-	-
Stage 2	285	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11	8.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1596	-	125	1065	-	-
HCM Lane V/C Ratio	0.372	-	0.036	0.416	-	-
HCM Control Delay (s)	8.6	0	34.9	10.8	-	-
HCM Lane LOS	A	A	D	B	-	-
HCM 95th %tile Q(veh)	1.8	-	0.1	2.1	-	-

Intersection	
Int Delay, s/veh	108.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	159	42	6	94	110	83	187	17	139	153	14
Future Vol, veh/h	12	159	42	6	94	110	83	187	17	139	153	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	250	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	85	85	85	68	68	68	64	64	64
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	14	183	48	7	111	129	122	275	25	217	239	22

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1336	1228	250	1332	1227	288	261	0	0	300	0	0
Stage 1	684	684	-	532	532	-	-	-	-	-	-	-
Stage 2	652	544	-	800	695	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	130	~ 178	789	131	178	751	1303	-	-	1261	-	-
Stage 1	439	449	-	531	526	-	-	-	-	-	-	-
Stage 2	457	519	-	379	444	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	22	~ 126	789	-	126	751	1303	-	-	1261	-	-
Mov Cap-2 Maneuver	22	~ 126	-	-	126	-	-	-	-	-	-	-
Stage 1	389	358	-	471	467	-	-	-	-	-	-	-
Stage 2	256	460	-	139	354	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	$ 606.5		2.3	3.8
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1303	-	-	114	-	751	1261	-	-
HCM Lane V/C Ratio	0.094	-	-	2.148	-	0.172	0.172	-	-
HCM Control Delay (s)	8	0	-	$ 606.5	-	10.8	8.4	0	-
HCM Lane LOS	A	A	-	F	-	B	A	A	-
HCM 95th %tile Q(veh)	0.3	-	-	20.8	-	0.6	0.6	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	18.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	33	157	146	4	86	17	77	254	5	45	426	37
Future Vol, veh/h	33	157	146	4	86	17	77	254	5	45	426	37
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	325	225	-	225	1000	-	0	785	-	785
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	74	74	74	94	94	94	91	91	91
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	185	172	5	116	23	82	270	5	49	468	41

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1072	1005	468	1199	1041	270	509	0	0	275	0	0
Stage 1	566	566	-	434	434	-	-	-	-	-	-	-
Stage 2	506	439	-	765	607	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	198	241	595	162	230	769	1056	-	-	1288	-	-
Stage 1	509	507	-	600	581	-	-	-	-	-	-	-
Stage 2	549	578	-	396	486	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	97	214	595	29	204	769	1056	-	-	1288	-	-
Mov Cap-2 Maneuver	97	214	-	29	204	-	-	-	-	-	-	-
Stage 1	469	488	-	553	536	-	-	-	-	-	-	-
Stage 2	385	533	-	168	468	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	48.5	42.5	2	0.7
HCM LOS	E	E		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1056	-	-	97	214	595	29	204	769	1288	-	-
HCM Lane V/C Ratio	0.078	-	-	0.4	0.863	0.289	0.186	0.57	0.03	0.038	-	-
HCM Control Delay (s)	8.7	-	-	64.9	77.5	13.5	155.7	43.7	9.8	7.9	-	-
HCM Lane LOS	A	-	-	F	F	B	F	E	A	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	1.6	6.7	1.2	0.6	3.1	0.1	0.1	-	-

Intersection						
Int Delay, s/veh	7.7					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	6	112	218	13	5	3
Future Vol, veh/h	6	112	218	13	5	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	79	79	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	135	276	16	6	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	576	8	10	0	-	0
Stage 1	8	-	-	-	-	-
Stage 2	568	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	479	1074	1610	-	-	-
Stage 1	1015	-	-	-	-	-
Stage 2	567	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	396	1074	1610	-	-	-
Mov Cap-2 Maneuver	396	-	-	-	-	-
Stage 1	839	-	-	-	-	-
Stage 2	567	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.1	7.3	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1610	-	396	1074	-	-
HCM Lane V/C Ratio	0.171	-	0.018	0.126	-	-
HCM Control Delay (s)	7.7	0	14.3	8.8	-	-
HCM Lane LOS	A	A	B	A	-	-
HCM 95th %tile Q(veh)	0.6	-	0.1	0.4	-	-

Intersection	
Int Delay, s/veh	9.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	11	78	31	9	153	105	47	115	12	50	63	4
Future Vol, veh/h	11	78	31	9	153	105	47	115	12	50	63	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	250	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	94	94	94	74	74	74	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	94	37	10	163	112	64	155	16	60	76	5

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	628	498	79	555	492	163	81	0	0	171	0	0
Stage 1	199	199	-	291	291	-	-	-	-	-	-	-
Stage 2	429	299	-	264	201	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	395	474	981	442	478	882	1517	-	-	1406	-	-
Stage 1	803	736	-	717	672	-	-	-	-	-	-	-
Stage 2	604	666	-	741	735	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	229	431	981	330	435	882	1517	-	-	1406	-	-
Mov Cap-2 Maneuver	229	431	-	330	435	-	-	-	-	-	-	-
Stage 1	765	703	-	683	640	-	-	-	-	-	-	-
Stage 2	375	635	-	590	702	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.4	15.3	2	3.3
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1517	-	-	460	427	882	1406	-	-
HCM Lane V/C Ratio	0.042	-	-	0.314	0.404	0.127	0.043	-	-
HCM Control Delay (s)	7.5	0	-	16.4	19	9.7	7.7	0	-
HCM Lane LOS	A	A	-	C	C	A	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.3	1.9	0.4	0.1	-	-

Intersection	
Int Delay, s/veh	21.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	49	67	5	124	34	120	468	8	10	370	29
Future Vol, veh/h	18	49	67	5	124	34	120	468	8	10	370	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	325	225	-	225	1000	-	0	785	-	785
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	85	85	85	92	92	92	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	53	72	6	146	40	130	509	9	11	411	32

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1300	1211	411	1281	1234	509	443	0	0	518	0	0
Stage 1	433	433	-	769	769	-	-	-	-	-	-	-
Stage 2	867	778	-	512	465	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	138	182	641	142	177	564	1117	-	-	1048	-	-
Stage 1	601	582	-	394	411	-	-	-	-	-	-	-
Stage 2	348	407	-	545	563	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	20	159	641	85	155	564	1117	-	-	1048	-	-
Mov Cap-2 Maneuver	20	159	-	85	155	-	-	-	-	-	-	-
Stage 1	531	576	-	348	363	-	-	-	-	-	-	-
Stage 2	171	360	-	435	557	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	81.2	91.6	1.7	0.2
HCM LOS	F	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1117	-	-	20	159	641	85	155	564	1048	-	-
HCM Lane V/C Ratio	0.117	-	-	0.968	0.331	0.112	0.069	0.941	0.071	0.011	-	-
HCM Control Delay (s)	8.6	-	-	$ 457.8	38.5	11.3	50.5	115.1	11.9	8.5	-	-
HCM Lane LOS	A	-	-	F	E	B	F	F	B	A	-	-
HCM 95th %tile Q(veh)	0.4	-	-	2.7	1.4	0.4	0.2	6.8	0.2	0	-	-

Intersection	
Int Delay, s/veh	8.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	264	86	14	26	1
Future Vol, veh/h	4	264	86	14	26	1
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	250	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	87	87	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	5	338	99	16	28	1

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	243	29	29	0	-	0
Stage 1	29	-	-	-	-	-
Stage 2	214	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	745	1046	1584	-	-	-
Stage 1	994	-	-	-	-	-
Stage 2	822	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	699	1046	1584	-	-	-
Mov Cap-2 Maneuver	699	-	-	-	-	-
Stage 1	932	-	-	-	-	-
Stage 2	822	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10.1	6.4	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1584	-	699	1046	-	-
HCM Lane V/C Ratio	0.062	-	0.007	0.324	-	-
HCM Control Delay (s)	7.4	-	10.2	10.1	-	-
HCM Lane LOS	A	-	B	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0	1.4	-	-

Intersection						
Int Delay, s/veh	14.4					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	400	337	82	257	34
Future Vol, veh/h	19	400	337	82	257	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	250	-	-	205
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	51	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	597	661	96	302	40

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1720	302	342	0	-	0
Stage 1	302	-	-	-	-	-
Stage 2	1418	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	98	738	1217	-	-	-
Stage 1	750	-	-	-	-	-
Stage 2	224	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	45	738	1217	-	-	-
Mov Cap-2 Maneuver	143	-	-	-	-	-
Stage 1	343	-	-	-	-	-
Stage 2	224	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	27.5	10	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1217	-	143	738	-	-
HCM Lane V/C Ratio	0.543	-	0.198	0.809	-	-
HCM Control Delay (s)	11.4	-	36.3	27.1	-	-
HCM Lane LOS	B	-	E	D	-	-
HCM 95th %tile Q(veh)	3.4	-	0.7	8.6	-	-

Intersection	
Intersection Delay, s/veh	124.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	13	213	63	25	133	172	96	234	25	329	309	19
Future Vol, veh/h	13	213	63	25	133	172	96	234	25	329	309	19
Peak Hour Factor	0.87	0.87	0.87	0.85	0.85	0.85	0.68	0.68	0.68	0.64	0.64	0.64
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	15	245	72	29	156	202	141	344	37	514	483	30
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	45.4	54.1	56.7	210.5
HCM LOS	E	F	F	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	90%	0%	77%	0%	44%	0%	94%
Vol Right, %	0%	10%	0%	23%	0%	56%	0%	6%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	96	259	13	276	25	305	329	328
LT Vol	96	0	13	0	25	0	329	0
Through Vol	0	234	0	213	0	133	0	309
RT Vol	0	25	0	63	0	172	0	19
Lane Flow Rate	141	381	15	317	29	359	514	512
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.384	0.976	0.042	0.84	0.082	0.913	1.415	1.33
Departure Headway (Hd)	9.904	9.227	10.41	9.718	10.273	9.335	9.912	9.345
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	366	392	346	374	351	391	370	390
Service Time	7.604	7.01	8.11	7.418	7.973	7.035	7.693	7.126
HCM Lane V/C Ratio	0.385	0.972	0.043	0.848	0.083	0.918	1.389	1.313
HCM Control Delay	18.6	70.8	13.6	46.9	13.9	57.4	228.9	192
HCM Lane LOS	C	F	B	E	B	F	F	F
HCM 95th-tile Q	1.8	11.3	0.1	7.7	0.3	9.6	26	23.8

Intersection	
Int Delay, s/veh	0.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	61	257	324	4	118	17	136	378	5	45	635	45
Future Vol, veh/h	61	257	324	4	118	17	136	378	5	45	635	45
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	325	225	-	225	1000	-	0	785	-	785
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	72	302	381	5	139	20	160	445	6	53	747	53

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1701	1624	747	1986	1671	445	800	0	0	451	0	0
Stage 1	853	853	-	765	765	-	-	-	-	-	-	-
Stage 2	848	771	-	1221	906	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	73	~ 102	413	46	~ 96	613	823	-	-	1109	-	-
Stage 1	354	376	-	396	412	-	-	-	-	-	-	-
Stage 2	356	410	-	220	355	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 78	413	-	~ 74	613	823	-	-	1109	-	-
Mov Cap-2 Maneuver	-	~ 78	-	-	~ 74	-	-	-	-	-	-	-
Stage 1	285	358	-	319	332	-	-	-	-	-	-	-
Stage 2	161	330	-	~ 3	338	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			2.7	0.5
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	823	-	-	-	78	413	-	74	613	1109	-	-
HCM Lane V/C Ratio	0.194	-	-	-	3.876	0.923	-	1.876	0.033	0.048	-	-
HCM Control Delay (s)	10.4	-	-	-	$ 1405	59	-	$ 533.4	11.1	8.4	-	-
HCM Lane LOS	B	-	-	-	F	F	-	F	B	A	-	-
HCM 95th %tile Q(veh)	0.7	-	-	-	31.6	10.1	-	12.3	0.1	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	7.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	9	172	296	30	17	8
Future Vol, veh/h	9	172	296	30	17	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	300	-	250	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	87	87	94	94
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	12	221	340	34	18	9

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	737	23	27	0	-	0
Stage 1	23	-	-	-	-	-
Stage 2	714	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	386	1054	1587	-	-	-
Stage 1	1000	-	-	-	-	-
Stage 2	485	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	303	1054	1587	-	-	-
Mov Cap-2 Maneuver	303	-	-	-	-	-
Stage 1	786	-	-	-	-	-
Stage 2	485	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	7.2	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1587	-	303	1054	-	-
HCM Lane V/C Ratio	0.214	-	0.038	0.209	-	-
HCM Control Delay (s)	7.9	-	17.4	9.3	-	-
HCM Lane LOS	A	-	C	A	-	-
HCM 95th %tile Q(veh)	0.8	-	0.1	0.8	-	-

Intersection	
Int Delay, s/veh	5.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	33	183	342	305	168	21
Future Vol, veh/h	33	183	342	305	168	21
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	250	-	-	205
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	215	402	359	198	25

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1361	198	223	0	-	0
Stage 1	198	-	-	-	-	-
Stage 2	1163	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	163	843	1346	-	-	-
Stage 1	835	-	-	-	-	-
Stage 2	297	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	114	843	1346	-	-	-
Mov Cap-2 Maneuver	224	-	-	-	-	-
Stage 1	585	-	-	-	-	-
Stage 2	297	-	-	-	-	-

Approach	EB		NB		SB
HCM Control Delay, s	12.8		4.7		0
HCM LOS	B				

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1346	-	224	843	-	-
HCM Lane V/C Ratio	0.299	-	0.173	0.255	-	-
HCM Control Delay (s)	8.8	-	24.4	10.7	-	-
HCM Lane LOS	A	-	C	B	-	-
HCM 95th %tile Q(veh)	1.3	-	0.6	1	-	-

Intersection	
Intersection Delay, s/veh	82.2
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	15	130	45	22	220	332	72	300	33	179	164	8
Future Vol, veh/h	15	130	45	22	220	332	72	300	33	179	164	8
Peak Hour Factor	0.83	0.83	0.83	0.94	0.94	0.94	0.85	0.85	0.85	0.83	0.83	0.83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	18	157	54	23	234	353	85	353	39	216	198	10
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	2	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	2	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	2	2	2
HCM Control Delay	21.8	172.7	48	22.8
HCM LOS	C	F	E	C

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%
Vol Thru, %	0%	90%	0%	74%	0%	40%	0%	95%
Vol Right, %	0%	10%	0%	26%	0%	60%	0%	5%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	72	333	15	175	22	552	179	172
LT Vol	72	0	15	0	22	0	179	0
Through Vol	0	300	0	130	0	220	0	164
RT Vol	0	33	0	45	0	332	0	8
Lane Flow Rate	85	392	18	211	23	587	216	207
Geometry Grp	7	7	7	7	7	7	7	7
Degree of Util (X)	0.209	0.905	0.048	0.522	0.058	1.311	0.547	0.495
Departure Headway (Hd)	9.745	9.149	10.399	9.682	8.99	8.035	10.059	9.499
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	371	400	346	375	399	452	360	381
Service Time	7.445	6.849	8.099	7.382	6.737	5.781	7.759	7.199
HCM Lane V/C Ratio	0.229	0.98	0.052	0.563	0.058	1.299	0.6	0.543
HCM Control Delay	15	55.1	13.6	22.5	12.3	179.1	24.3	21.2
HCM Lane LOS	B	F	B	C	B	F	C	C
HCM 95th-tile Q	0.8	9.5	0.2	2.9	0.2	25.8	3.1	2.6

Intersection	
Int Delay, s/veh	1.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	113	183	5	240	34	326	697	8	10	551	62
Future Vol, veh/h	36	113	183	5	240	34	326	697	8	10	551	62
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	325	225	-	225	1000	-	0	785	-	785
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	85	85	85	92	92	92	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	39	122	197	6	282	40	354	758	9	11	612	69

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2266	2109	612	2294	2169	758	681	0	0	767	0	0
Stage 1	634	634	-	1466	1466	-	-	-	-	-	-	-
Stage 2	1632	1475	-	828	703	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 29	~ 51	493	27	~ 47	407	912	-	-	847	-	-
Stage 1	467	473	-	159	~ 192	-	-	-	-	-	-	-
Stage 2	128	190	-	365	440	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 31	493	-	~ 28	407	912	-	-	847	-	-
Mov Cap-2 Maneuver	-	~ 31	-	-	~ 28	-	-	-	-	-	-	-
Stage 1	286	467	-	97	~ 118	-	-	-	-	-	-	-
Stage 2	-	~ 116	-	160	434	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			3.6	0.1
HCM LOS	-	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	912	-	-	-	31	493	-	28	407	847	-	-
HCM Lane V/C Ratio	0.389	-	-	-	3.92	0.399	-	10.084	0.098	0.013	-	-
HCM Control Delay (s)	11.4	-	-		$ 1575.7	17.1		$ 4359.4	14.8	9.3	-	-
HCM Lane LOS	B	-	-	-	F	C	-	F	B	A	-	-
HCM 95th %tile Q(veh)	1.9	-	-	-	14.5	1.9	-	34.8	0.3	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	8.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	4	6	267	13	9	4	95	17	31	3	27	1
Future Vol, veh/h	4	6	267	13	9	4	95	17	31	3	27	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	205	200	-	-	250	-	205	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	86	86	86	87	87	87	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	5	8	342	15	10	5	109	20	36	3	29	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	300	310	30	449	274	20	30	0	0	56	0	0
Stage 1	36	36	-	238	238	-	-	-	-	-	-	-
Stage 2	264	274	-	211	36	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	652	605	1044	520	633	1058	1583	-	-	1549	-	-
Stage 1	980	865	-	765	708	-	-	-	-	-	-	-
Stage 2	741	683	-	791	865	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	606	562	1044	327	588	1058	1583	-	-	1549	-	-
Mov Cap-2 Maneuver	606	562	-	327	588	-	-	-	-	-	-	-
Stage 1	912	863	-	712	659	-	-	-	-	-	-	-
Stage 2	676	636	-	526	863	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	13.5	4.9	0.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1583	-	-	606	562	1044	327	681	1549	-	-
HCM Lane V/C Ratio	0.069	-	-	0.008	0.014	0.328	0.046	0.022	0.002	-	-
HCM Control Delay (s)	7.4	-	-	11	11.5	10.1	16.5	10.4	7.3	-	-
HCM Lane LOS	A	-	-	B	B	B	C	B	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0	0	1.4	0.1	0.1	0	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	40	0	0	27	0
Future Vol, veh/h	0	40	0	0	27	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	205	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	47	0	0	32	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	47	0	25	24
Stage 1	-	-	-	-	24	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1560	-	991	1052
Stage 1	-	-	-	-	999	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1560	-	991	1052
Mov Cap-2 Maneuver	-	-	-	-	910	-
Stage 1	-	-	-	-	999	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	910	-	-	-	1560	-
HCM Lane V/C Ratio	0.035	-	-	-	-	-
HCM Control Delay (s)	9.1	0	-	-	0	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	-	0	-

Intersection	
Int Delay, s/veh	5.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	231	7	137	73	2	306
Future Vol, veh/h	231	7	137	73	2	306
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	272	8	161	86	2	360

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	525	161	0	0	247	0
Stage 1	161	-	-	-	-	-
Stage 2	364	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	513	884	-	-	1319	-
Stage 1	868	-	-	-	-	-
Stage 2	703	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	512	884	-	-	1319	-
Mov Cap-2 Maneuver	580	-	-	-	-	-
Stage 1	868	-	-	-	-	-
Stage 2	702	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.4	0	0.1
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	580	884	1319	-
HCM Lane V/C Ratio	-	-	0.469	0.009	0.002	-
HCM Control Delay (s)	-	-	16.6	9.1	7.7	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	2.5	0	0	-

Intersection	
Int Delay, s/veh	1.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	60	5	205	20	2	535
Future Vol, veh/h	60	5	205	20	2	535
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	115	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	71	6	241	24	2	629

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	874	241	0	0	265	0
Stage 1	241	-	-	-	-	-
Stage 2	633	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	320	798	-	-	1299	-
Stage 1	799	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	319	798	-	-	1299	-
Mov Cap-2 Maneuver	424	-	-	-	-	-
Stage 1	799	-	-	-	-	-
Stage 2	528	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	14.8	0	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	424	798	1299	-
HCM Lane V/C Ratio	-	-	0.166	0.007	0.002	-
HCM Control Delay (s)	-	-	15.2	9.5	7.8	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	0.6	0	0	-

Intersection	
Int Delay, s/veh	50.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	26	400	337	200	550	46
Future Vol, veh/h	26	400	337	200	550	46
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	250	-	-	205
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	67	67	51	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	597	661	235	647	54

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2204	647	701	0	-	0
Stage 1	647	-	-	-	-	-
Stage 2	1557	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	49	~ 471	896	-	-	-
Stage 1	521	-	-	-	-	-
Stage 2	191	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 13	~ 471	896	-	-	-
Mov Cap-2 Maneuver	79	-	-	-	-	-
Stage 1	137	-	-	-	-	-
Stage 2	191	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	157.7	14.3	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	896	-	79	471	-	-
HCM Lane V/C Ratio	0.737	-	0.491	1.268	-	-
HCM Control Delay (s)	19.4	-	88.3	162.2	-	-
HCM Lane LOS	C	-	F	F	-	-
HCM 95th %tile Q(veh)	6.8	-	2.1	24.8	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	339.1
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	33	213	63	25	133	238	96	266	25	484	400	65
Future Vol, veh/h	33	213	63	25	133	238	96	266	25	484	400	65
Peak Hour Factor	0.87	0.87	0.87	0.85	0.85	0.85	0.68	0.68	0.68	0.64	0.64	0.64
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	245	72	29	156	280	141	391	37	756	625	102
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	2	2
HCM Control Delay	86.3	203.6	165.5	508.9
HCM LOS	F	F	F	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	91%	0%	77%	0%	36%	0%	100%	0%
Vol Right, %	0%	9%	0%	23%	0%	64%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	96	291	33	276	25	371	484	400	65
LT Vol	96	0	33	0	25	0	484	0	0
Through Vol	0	266	0	213	0	133	0	400	0
RT Vol	0	25	0	63	0	238	0	0	65
Lane Flow Rate	141	428	38	317	29	436	756	625	102
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.465	1.344	0.127	1.007	0.099	1.36	2.349	1.855	0.282
Departure Headway (Hd)	13.639	13.054	13.787	13.1	13.666	12.685	12.865	12.331	11.584
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	265	282	262	279	264	292	295	300	312
Service Time	11.339	10.754	11.487	10.8	11.366	10.385	10.565	10.031	9.284
HCM Lane V/C Ratio	0.532	1.518	0.145	1.136	0.11	1.493	2.563	2.083	0.327
HCM Control Delay	27.7	211	18.5	94.4	17.9	216.1	644.2	424.9	18.8
HCM Lane LOS	D	F	C	F	C	F	F	F	C
HCM 95th-tile Q	2.3	19.1	0.4	10.3	0.3	20	51.9	36.7	1.1

Intersection												
Int Delay, s/veh	1.1											
Movement	**EBL**	**EBT**	**EBR**	**WBL**	**WBT**	**WBR**	**NBL**	**NBT**	**NBR**	**SBL**	**SBT**	**SBR**
Lane Configurations	↰	↑	↱	↰	↑	↱	↰	↑	↱	↰	↑	↱
Traffic Vol, veh/h	70	284	444	4	130	17	185	378	5	45	635	51
Future Vol, veh/h	70	284	444	4	130	17	185	378	5	45	635	51
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	325	225	-	225	1000	-	0	785	-	785
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	85	85	85	85	85	85	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	82	334	522	5	153	20	218	445	6	53	747	60
Major/Minor	**Minor2**			**Minor1**			**Major1**			**Major2**		
Conflicting Flow All	1824	1740	747	2192	1794	445	807	0	0	451	0	0
Stage 1	853	853	-	881	881	-	-	-	-	-	-	-
Stage 2	971	887	-	1311	913	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 59	~ 87	~ 413	33	~ 80	613	818	-	-	1109	-	-
Stage 1	354	376	-	341	365	-	-	-	-	-	-	-
Stage 2	304	362	-	195	352	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 61	~ 413	-	~ 56	613	818	-	-	1109	-	-
Mov Cap-2 Maneuver	-	~ 61	-	-	~ 56	-	-	-	-	-	-	-
Stage 1	259	358	-	250	268	-	-	-	-	-	-	-
Stage 2	93	~ 265	-	-	335	-	-	-	-	-	-	-
Approach	**EB**			**WB**			**NB**			**SB**		
HCM Control Delay, s							3.6			0.5		
HCM LOS	-			-								
Minor Lane/Major Mvmt	**NBL**	**NBT**	**NBR**	**EBLn1**	**EBLn2**	**EBLn3**	**WBLn1**	**WBLn2**	**WBLn3**	**SBL**	**SBT**	**SBR**
Capacity (veh/h)	818	-	-	-	61	413	-	56	613	1109	-	-
HCM Lane V/C Ratio	0.266	-	-	-	5.477	1.265	-	2.731	0.033	0.048	-	-
HCM Control Delay (s)	11	-	-	-	$ 2148.6	165.5	-	$ 939.1	11.1	8.4	-	-
HCM Lane LOS	B	-	-	-	F	F	-	F	B	A	-	-
HCM 95th %tile Q(veh)	1.1	-	-	-	37.5	22.4	-	15.8	0.1	0.1	-	-

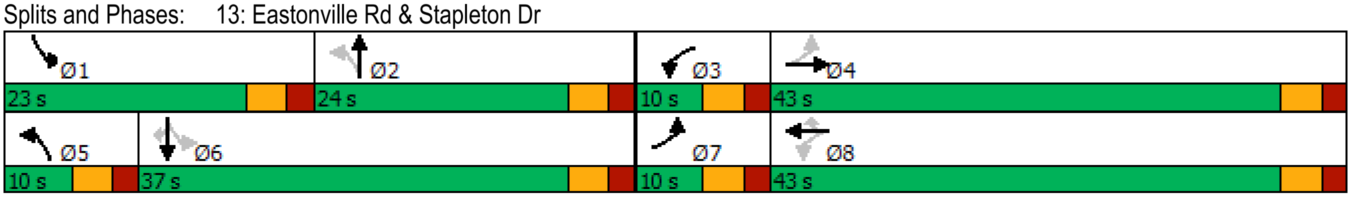
Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	33	213	25	133	238	96	266	484	400	65
Future Volume (vph)	33	213	25	133	238	96	266	484	400	65
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases	4		8		8	2		6		6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	10.0	43.0	10.0	43.0	43.0	10.0	24.0	23.0	37.0	37.0
Total Split (%)	10.0%	43.0%	10.0%	43.0%	43.0%	10.0%	24.0%	23.0%	37.0%	37.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	20.5	18.8	19.5	16.8	16.8	24.1	19.0	42.4	34.7	34.7
Actuated g/C Ratio	0.27	0.25	0.26	0.22	0.22	0.32	0.25	0.57	0.46	0.46
v/c Ratio	0.11	0.70	0.12	0.37	0.49	0.32	0.73	0.97	0.55	0.09
Control Delay	17.8	33.2	18.0	27.8	6.4	16.0	38.8	50.5	21.3	1.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	17.8	33.2	18.0	27.8	6.4	16.0	38.8	50.5	21.3	1.0
LOS	B	C	B	C	A	B	D	D	C	A
Approach Delay		31.6		14.3			33.1		34.8	
Approach LOS		C		B			C		C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 74.9	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.97	
Intersection Signal Delay: 30.0	Intersection LOS: C
Intersection Capacity Utilization 78.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	284	444	4	130	17	185	378	5	45	635	51
Future Volume (vph)	70	284	444	4	130	17	185	378	5	45	635	51
Turn Type	Perm	NA	Free	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		Free	8		8	2		2	6		6
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	1.0	1.0		1.0	1.0	1.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	6.0	6.0		6.0	6.0	6.0	10.0	20.0	20.0	10.0	20.0	20.0
Total Split (s)	40.0	40.0		40.0	40.0	40.0	13.0	70.0	70.0	10.0	67.0	67.0
Total Split (%)	33.3%	33.3%		33.3%	33.3%	33.3%	10.8%	58.3%	58.3%	8.3%	55.8%	55.8%
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	24.8	24.8	110.1	24.8	24.8	24.8	73.7	66.4	66.4	67.2	61.2	61.2
Actuated g/C Ratio	0.23	0.23	1.00	0.23	0.23	0.23	0.67	0.60	0.60	0.61	0.56	0.56
v/c Ratio	0.34	0.80	0.33	0.05	0.37	0.05	0.63	0.40	0.01	0.09	0.72	0.07
Control Delay	39.1	54.6	0.6	33.2	37.9	0.2	17.2	14.4	0.0	7.8	24.5	3.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	39.1	54.6	0.6	33.2	37.9	0.2	17.2	14.4	0.0	7.8	24.5	3.5
LOS	D	D	A	C	D	A	B	B	A	A	C	A
Approach Delay		23.2			33.6			15.2			22.0	
Approach LOS		C			C			B			C	

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 110.1
Natural Cycle: 65
Control Type: Semi Act-Uncoord
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 21.5 Intersection LOS: C
Intersection Capacity Utilization 79.5% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 14: US 24 & Stapleton Dr

Intersection												
Int Delay, s/veh	8.5											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	11	181	19	9	4	301	32	32	5	21	8
Future Vol, veh/h	9	11	181	19	9	4	301	32	32	5	21	8
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	300	-	205	200	-	-	250	-	205	250	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	78	78	78	86	86	86	87	87	87	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	12	14	232	22	10	5	346	37	37	5	22	9

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	792	803	27	889	770	37	31	0	0	74	0	0
Stage 1	37	37	-	729	729	-	-	-	-	-	-	-
Stage 2	755	766	-	160	41	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	307	317	1048	264	331	1035	1582	-	-	1526	-	-
Stage 1	978	864	-	414	428	-	-	-	-	-	-	-
Stage 2	401	412	-	842	861	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	246	247	1048	163	258	1035	1582	-	-	1526	-	-
Mov Cap-2 Maneuver	246	247	-	163	258	-	-	-	-	-	-	-
Stage 1	764	861	-	323	334	-	-	-	-	-	-	-
Stage 2	302	322	-	643	858	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.5	24.7	6.5	1.1
HCM LOS	B	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	SBL	SBT	SBR
Capacity (veh/h)	1582	-	-	246	247	1048	163	335	1526	-	-
HCM Lane V/C Ratio	0.219	-	-	0.047	0.057	0.221	0.136	0.045	0.003	-	-
HCM Control Delay (s)	7.9	-	-	20.4	20.5	9.4	30.5	16.3	7.4	-	-
HCM Lane LOS	A	-	-	C	C	A	D	C	A	-	-
HCM 95th %tile Q(veh)	0.8	-	-	0.1	0.2	0.8	0.5	0.1	0	-	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	0	47	0	0	31	0
Future Vol, veh/h	0	47	0	0	31	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	205	-	0	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	55	0	0	36	0

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	55	0	29	28
Stage 1	-	-	-	-	28	-
Stage 2	-	-	-	-	1	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1550	-	986	1047
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	1022	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1550	-	986	1047
Mov Cap-2 Maneuver	-	-	-	-	907	-
Stage 1	-	-	-	-	995	-
Stage 2	-	-	-	-	1022	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	907	-	-	-	1550	-
HCM Lane V/C Ratio	0.04	-	-	-	-	-
HCM Control Delay (s)	9.1	0	-	-	0	-
HCM Lane LOS	A	A	-	-	A	-
HCM 95th %tile Q(veh)	0.1	-	-	-	0	-

Intersection						
Int Delay, s/veh	2.8					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	161	5	373	244	8	213
Future Vol, veh/h	161	5	373	244	8	213
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	189	6	439	287	9	251

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	708	439	0	0	726	0
Stage 1	439	-	-	-	-	-
Stage 2	269	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	401	618	-	-	877	-
Stage 1	650	-	-	-	-	-
Stage 2	776	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	397	618	-	-	877	-
Mov Cap-2 Maneuver	500	-	-	-	-	-
Stage 1	650	-	-	-	-	-
Stage 2	768	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.3	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	500	618	877	-
HCM Lane V/C Ratio	-	-	0.379	0.01	0.011	-
HCM Control Delay (s)	-	-	16.5	10.9	9.1	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	1.8	0	0	-

Intersection	
Int Delay, s/veh	0.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	37	5	611	65	7	367
Future Vol, veh/h	37	5	611	65	7	367
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	115	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	44	6	719	76	8	432

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1167	719	0	0	795	0
Stage 1	719	-	-	-	-	-
Stage 2	448	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	214	428	-	-	826	-
Stage 1	483	-	-	-	-	-
Stage 2	644	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	212	428	-	-	826	-
Mov Cap-2 Maneuver	345	-	-	-	-	-
Stage 1	483	-	-	-	-	-
Stage 2	638	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.5	0	0.2
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	345	428	826	-
HCM Lane V/C Ratio	-	-	0.126	0.014	0.01	-
HCM Control Delay (s)	-	-	16.9	13.5	9.4	-
HCM Lane LOS	-	-	C	B	A	-
HCM 95th %tile Q(veh)	-	-	0.4	0	0	-

Intersection						
Int Delay, s/veh	5.1					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	46	183	342	630	373	31
Future Vol, veh/h	46	183	342	630	373	31
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	250	-	-	205
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	54	215	402	741	439	36

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1984	439	475	0	-	0
Stage 1	439	-	-	-	-	-
Stage 2	1545	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	67	618	1087	-	-	-
Stage 1	650	-	-	-	-	-
Stage 2	194	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 42	618	1087	-	-	-
Mov Cap-2 Maneuver	137	-	-	-	-	-
Stage 1	410	-	-	-	-	-
Stage 2	194	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.6	3.6	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	1087	-	137	618	-	-
HCM Lane V/C Ratio	0.37	-	0.395	0.348	-	-
HCM Control Delay (s)	10.2	-	47.5	13.9	-	-
HCM Lane LOS	B	-	E	B	-	-
HCM 95th %tile Q(veh)	1.7	-	1.7	1.6	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Intersection Delay, s/veh	265
Intersection LOS	F

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	67	130	45	22	220	507	72	398	33	289	226	41
Future Vol, veh/h	67	130	45	22	220	507	72	398	33	289	226	41
Peak Hour Factor	0.83	0.83	0.83	0.94	0.94	0.94	0.85	0.85	0.85	0.83	0.83	0.83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	81	157	54	23	234	539	85	468	39	348	272	49
Number of Lanes	1	1	0	1	1	0	1	1	0	1	1	1

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	2	2	3	2
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	3	2	2	2
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	2	3	2	2
HCM Control Delay	35.7	541.2	223.8	72.5
HCM LOS	E	F	F	F

Lane	NBLn1	NBLn2	EBLn1	EBLn2	WBLn1	WBLn2	SBLn1	SBLn2	SBLn3
Vol Left, %	100%	0%	100%	0%	100%	0%	100%	0%	0%
Vol Thru, %	0%	92%	0%	74%	0%	30%	0%	100%	0%
Vol Right, %	0%	8%	0%	26%	0%	70%	0%	0%	100%
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Stop
Traffic Vol by Lane	72	431	67	175	22	727	289	226	41
LT Vol	72	0	67	0	22	0	289	0	0
Through Vol	0	398	0	130	0	220	0	226	0
RT Vol	0	33	0	45	0	507	0	0	41
Lane Flow Rate	85	507	81	211	23	773	348	272	49
Geometry Grp	8	8	8	8	8	8	8	8	8
Degree of Util (X)	0.256	1.458	0.26	0.638	0.072	2.163	1.01	0.752	0.127
Departure Headway (Hd)	13.764	13.161	15.532	14.789	12.147	11.105	14.13	13.587	12.828
Convergence, Y/N	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cap	263	279	233	247	297	333	261	270	282
Service Time	11.464	10.861	13.232	12.489	9.847	8.805	11.83	11.287	10.528
HCM Lane V/C Ratio	0.323	1.817	0.348	0.854	0.077	2.321	1.333	1.007	0.174
HCM Control Delay	21.1	257.7	23.6	40.3	15.8	557.1	99.2	48.3	17.4
HCM Lane LOS	C	F	C	E	C	F	F	E	C
HCM 95th-tile Q	1	22.4	1	3.9	0.2	52.2	10	5.5	0.4

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	44	133	265	5	270	34	461	697	8	10	551	72
Future Vol, veh/h	44	133	265	5	270	34	461	697	8	10	551	72
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	185	-	325	225	-	225	1000	-	0	785	-	785
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	85	85	85	92	92	92	90	90	90
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	47	143	285	6	318	40	501	758	9	11	612	80

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	2578	2403	612	2648	2474	758	692	0	0	767	0	0
Stage 1	634	634	-	1760	1760	-	-	-	-	-	-	-
Stage 2	1944	1769	-	888	714	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	~ 17	~ 33	493	15	~ 30	407	903	-	-	847	-	-
Stage 1	467	473	-	108	~ 138	-	-	-	-	-	-	-
Stage 2	84	~ 136	-	338	435	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	-	~ 14	493	-	~ 13	407	903	-	-	847	-	-
Mov Cap-2 Maneuver	-	~ 14	-	-	~ 13	-	-	-	-	-	-	-
Stage 1	208	467	-	48	~ 61	-	-	-	-	-	-	-
Stage 2	-	~ 61	-	98	429	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s			5.5	0.1
HCM LOS	-	-		

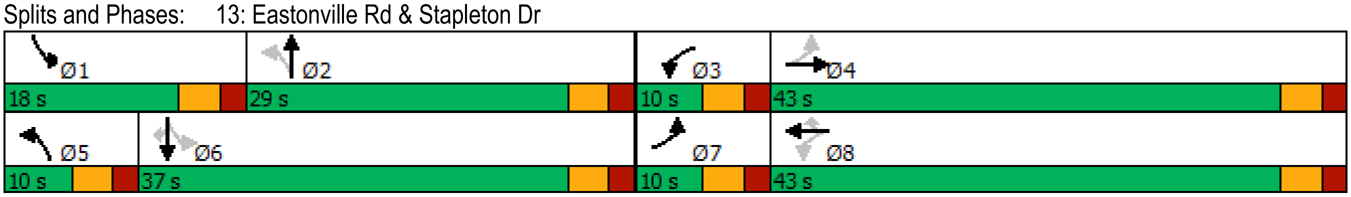
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	903	-	-	-	14	493	-	13	407	847	-	-
HCM Lane V/C Ratio	0.555	-	-	-	10.215	0.578	-	24.434	0.098	0.013	-	-
HCM Control Delay (s)	13.8	-	-	$	4676.7	21.8	$	11108.6	14.8	9.3	-	-
HCM Lane LOS	B	-	-	-	F	C	-	F	B	A	-	-
HCM 95th %tile Q(veh)	3.5	-	-	-	19	3.6	-	41	0.3	0	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	WBL	WBT	WBR	NBL	NBT	SBL	SBT	SBR
Lane Configurations										
Traffic Volume (vph)	67	130	22	220	507	72	398	289	226	41
Future Volume (vph)	67	130	22	220	507	72	398	289	226	41
Turn Type	pm+pt	NA	pm+pt	NA	Perm	pm+pt	NA	pm+pt	NA	Perm
Protected Phases	7	4	3	8		5	2	1	6	
Permitted Phases	4		8		8	2		6		6
Detector Phase	7	4	3	8	8	5	2	1	6	6
Switch Phase										
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0	10.0
Total Split (s)	10.0	43.0	10.0	43.0	43.0	10.0	29.0	18.0	37.0	37.0
Total Split (%)	10.0%	43.0%	10.0%	43.0%	43.0%	10.0%	29.0%	18.0%	37.0%	37.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lead	Lag	Lag	Lead	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	24.4	22.6	22.3	18.5	18.5	29.6	24.5	42.9	35.3	35.3
Actuated g/C Ratio	0.31	0.28	0.28	0.23	0.23	0.37	0.31	0.54	0.45	0.45
v/c Ratio	0.26	0.40	0.07	0.54	0.81	0.19	0.89	0.90	0.33	0.06
Control Delay	18.8	22.9	16.2	31.0	19.0	14.7	48.8	49.6	20.2	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.8	22.9	16.2	31.0	19.0	14.7	48.8	49.6	20.2	0.1
LOS	B	C	B	C	B	B	D	D	C	A
Approach Delay		21.8		22.5			43.9		34.0	
Approach LOS		C		C			D		C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 79.3	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.90	
Intersection Signal Delay: 31.1	Intersection LOS: C
Intersection Capacity Utilization 71.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	44	133	265	5	270	34	461	697	8	10	551	72
Future Volume (vph)	44	133	265	5	270	34	461	697	8	10	551	72
Turn Type	Perm	NA	Free	Perm	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4		Free	8		8	2		2	6		6
Detector Phase	4	4		8	8	8	5	2	2	1	6	6
Switch Phase												
Minimum Initial (s)	1.0	1.0		1.0	1.0	1.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	6.0	6.0		6.0	6.0	6.0	10.0	20.0	20.0	10.0	20.0	20.0
Total Split (s)	45.0	45.0		45.0	45.0	45.0	25.0	65.0	65.0	10.0	50.0	50.0
Total Split (%)	37.5%	37.5%		37.5%	37.5%	37.5%	20.8%	54.2%	54.2%	8.3%	41.7%	41.7%
Yellow Time (s)	3.0	3.0		3.0	3.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0
All-Red Time (s)	2.0	2.0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0		5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	6.0
Lead/Lag							Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?							Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None		None	None	None	None	Max	Max	None	Max	Max
Act Effct Green (s)	22.7	22.7	102.9	22.7	22.7	22.7	70.2	67.4	67.4	50.1	44.1	44.1
Actuated g/C Ratio	0.22	0.22	1.00	0.22	0.22	0.22	0.68	0.66	0.66	0.49	0.43	0.43
v/c Ratio	0.48	0.35	0.18	0.02	0.78	0.09	0.96	0.62	0.01	0.03	0.77	0.11
Control Delay	51.5	35.7	0.2	30.0	50.9	0.4	50.3	15.4	0.0	9.0	34.0	2.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.5	35.7	0.2	30.0	50.9	0.4	50.3	15.4	0.0	9.0	34.0	2.2
LOS	D	D	A	C	D	A	D	B	A	A	C	A
Approach Delay		16.0			45.0			29.1			30.0	
Approach LOS		B			D			C			C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 102.9	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.96	
Intersection Signal Delay: 29.2	Intersection LOS: C
Intersection Capacity Utilization 89.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 14: US 24 & Stapleton Dr

Intersection												
Int Delay, s/veh	345.9											

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	157	148	448	140	25	93	100	229	24	210	59
Future Vol, veh/h	23	157	148	448	140	25	93	100	229	24	210	59
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	155	350	-	155	315	-	155	205	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	165	156	472	147	26	98	105	241	25	221	62

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	779	813	221	764	634	105	283	0	0	346	0	0
Stage 1	271	271	-	301	301	-	-	-	-	-	-	-
Stage 2	508	542	-	463	333	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	313	313	819	~ 321	397	949	1279	-	-	1213	-	-
Stage 1	735	685	-	708	665	-	-	-	-	-	-	-
Stage 2	547	520	-	579	644	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	193	283	819	~ 130	359	949	1279	-	-	1213	-	-
Mov Cap-2 Maneuver	193	283	-	~ 130	359	-	-	-	-	-	-	-
Stage 1	678	671	-	653	614	-	-	-	-	-	-	-
Stage 2	373	480	-	~ 346	630	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	22.9	$ 920.5	1.8	0.7
HCM LOS	C	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1279	-	-	193	283	819	130	359	949	1213	-	-
HCM Lane V/C Ratio	0.077	-	-	0.125	0.584	0.19	3.628	0.41	0.028	0.021	-	-
HCM Control Delay (s)	8	-	-	26.3	34.1	10.4	$ 1252.2	21.8	8.9	8	-	-
HCM Lane LOS	A	-	-	D	D	B	F	C	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	0.4	3.4	0.7	46.5	1.9	0.1	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection						
Int Delay, s/veh	0.9					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	399	10	18	599	15	53
Future Vol, veh/h	399	10	18	599	15	53
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	155	-	205	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	434	11	20	651	16	58

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	445	0	1131	440
Stage 1	-	-	-	-	440	-
Stage 2	-	-	-	-	691	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1115	-	225	617
Stage 1	-	-	-	-	649	-
Stage 2	-	-	-	-	497	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1115	-	221	617
Mov Cap-2 Maneuver	-	-	-	-	352	-
Stage 1	-	-	-	-	649	-
Stage 2	-	-	-	-	488	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.2	12.3
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	352	617	-	-	1115	-
HCM Lane V/C Ratio	0.046	0.093	-	-	0.018	-
HCM Control Delay (s)	15.7	11.4	-	-	8.3	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.3	-	-	0.1	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	450	611	7	20	5
Future Vol, veh/h	2	450	611	7	20	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	489	664	8	22	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	672	0	-	0	1161	668
Stage 1	-	-	-	-	668	-
Stage 2	-	-	-	-	493	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	919	-	-	-	216	458
Stage 1	-	-	-	-	510	-
Stage 2	-	-	-	-	614	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	919	-	-	-	216	458
Mov Cap-2 Maneuver	-	-	-	-	351	-
Stage 1	-	-	-	-	509	-
Stage 2	-	-	-	-	614	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	15.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	919	-	-	-	368
HCM Lane V/C Ratio	0.002	-	-	-	0.074
HCM Control Delay (s)	8.9	-	-	-	15.6
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	94	973	481	385	536	79
Future Volume (vph)	94	973	481	385	536	79
Turn Type	Prot	Free	Prot	NA	NA	Perm
Protected Phases	6!		7	Free!	8	
Permitted Phases		Free				8
Detector Phase	6		7		8	8
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	20.0		10.0		20.0	20.0
Total Split (s)	24.0		36.0		60.0	60.0
Total Split (%)	20.0%		30.0%		50.0%	50.0%
Yellow Time (s)	3.0		3.0		3.0	3.0
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0		5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	Max		None		C-Max	C-Max
Act Effct Green (s)	19.0	120.0	22.9	120.0	63.1	63.1
Actuated g/C Ratio	0.16	1.00	0.19	1.00	0.53	0.53
v/c Ratio	0.35	0.65	0.77	0.11	0.30	0.10
Control Delay	49.1	2.1	40.3	0.1	17.2	3.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.1	2.1	40.3	0.1	17.2	3.7
LOS	D	A	D	A	B	A
Approach Delay	6.2			22.7	15.5	
Approach LOS	A			C	B	

Intersection Summary

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 50 (42%), Referenced to phase 8:SBT, Start of Green

Natural Cycle: 55

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 0.77

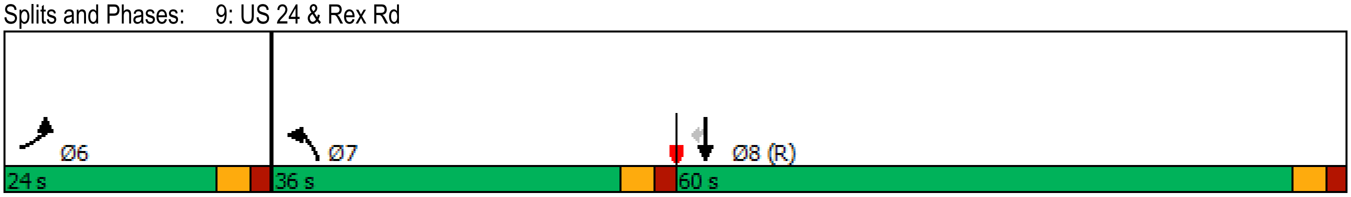
Intersection Signal Delay: 14.0 Intersection LOS: B

Intersection Capacity Utilization 45.4% ICU Level of Service A

Analysis Period (min) 15

! Phase conflict between lane groups.

Splits and Phases: 9: US 24 & Rex Rd



Intersection						
Int Delay, s/veh	0.8					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	52	0	423	13	0	809
Future Vol, veh/h	52	0	423	13	0	809
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	55	0	445	14	0	852

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1297	445	0	0	459	0
Stage 1	445	-	-	-	-	-
Stage 2	852	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	179	613	-	-	1102	-
Stage 1	646	-	-	-	-	-
Stage 2	418	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	179	613	-	-	1102	-
Mov Cap-2 Maneuver	308	-	-	-	-	-
Stage 1	646	-	-	-	-	-
Stage 2	418	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.2	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	308	-	1102	-
HCM Lane V/C Ratio	-	-	0.178	-	-	-
HCM Control Delay (s)	-	-	19.2	0	0	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	0.6	-	0	-

Intersection	
Int Delay, s/veh	0.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	14	421	0	5	856
Future Vol, veh/h	0	14	421	0	5	856
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	115	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	16	495	0	6	1007

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1514	495	0	0	495	0
Stage 1	495	-	-	-	-	-
Stage 2	1019	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	132	575	-	-	1069	-
Stage 1	613	-	-	-	-	-
Stage 2	348	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	131	575	-	-	1069	-
Mov Cap-2 Maneuver	255	-	-	-	-	-
Stage 1	613	-	-	-	-	-
Stage 2	346	-	-	-	-	-

Approach	WB		NB		SB	
HCM Control Delay, s	11.4		0		0	
HCM LOS	B					

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	575	1069	-
HCM Lane V/C Ratio	-	-	-	0.029	0.006	-
HCM Control Delay (s)	-	-	0	11.4	8.4	-
HCM Lane LOS	-	-	A	B	A	-
HCM 95th %tile Q(veh)	-	-	-	0.1	0	-

Intersection						
Int Delay, s/veh	14.4					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	71	299	340	348	835	121
Future Vol, veh/h	71	299	340	348	835	121
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	0	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	75	315	358	366	879	127

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1961	879	1006	0	-	0
Stage 1	879	-	-	-	-	-
Stage 2	1082	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 70	347	689	-	-	-
Stage 1	406	-	-	-	-	-
Stage 2	325	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 34	347	689	-	-	-
Mov Cap-2 Maneuver	126	-	-	-	-	-
Stage 1	195	-	-	-	-	-
Stage 2	325	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	63.9	7.8	0
HCM LOS	F		

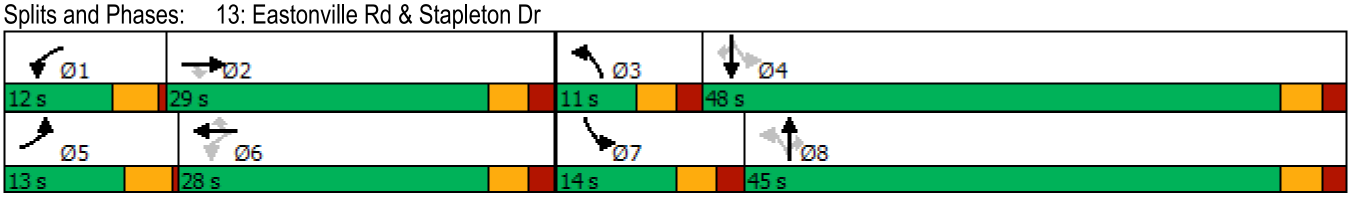
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	689	-	126	347	-	-
HCM Lane V/C Ratio	0.519	-	0.593	0.907	-	-
HCM Control Delay (s)	15.7	-	68.5	62.8	-	-
HCM Lane LOS	C	-	F	F	-	-
HCM 95th %tile Q(veh)	3	-	3	9	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	150	600	224	145	482	145	108	393	188	132	661	342
Future Volume (vph)	150	600	224	145	482	145	108	393	188	132	661	342
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	21.0	21.0	8.0	21.0	21.0	9.0	21.0	21.0	9.0	21.0	21.0
Total Split (s)	13.0	29.0	29.0	12.0	28.0	28.0	11.0	45.0	45.0	14.0	48.0	48.0
Total Split (%)	13.0%	29.0%	29.0%	12.0%	28.0%	28.0%	11.0%	45.0%	45.0%	14.0%	48.0%	48.0%
Yellow Time (s)	3.5	3.0	3.0	3.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	0.5	2.0	2.0	0.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	8.6	21.7	21.7	30.3	21.2	21.2	40.1	33.9	33.9	45.9	39.3	39.3
Actuated g/C Ratio	0.09	0.24	0.24	0.33	0.23	0.23	0.44	0.37	0.37	0.50	0.43	0.43
v/c Ratio	0.49	0.76	0.43	0.61	0.62	0.32	0.56	0.60	0.28	0.35	0.87	0.42
Control Delay	47.9	40.2	6.9	34.0	36.8	7.4	24.0	27.4	4.0	14.0	38.4	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.9	40.2	6.9	34.0	36.8	7.4	24.0	27.4	4.0	14.0	38.4	5.0
LOS	D	D	A	C	D	A	C	C	A	B	D	A
Approach Delay		33.7			30.7			20.5			25.5	
Approach LOS		C			C			C			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 91.7	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 27.9	Intersection LOS: C
Intersection Capacity Utilization 81.2%	ICU Level of Service D
Analysis Period (min) 15	

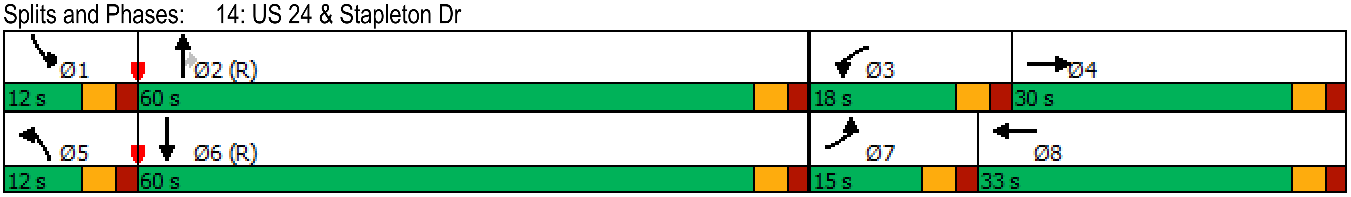
Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	364	523	75	370	114	275	705	50	260	1381	352
Future Volume (vph)	188	364	523	75	370	114	275	705	50	260	1381	352
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			2			Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		10.0	11.0	11.0	10.0	11.0	
Total Split (s)	15.0	30.0		18.0	33.0		12.0	60.0	60.0	12.0	60.0	
Total Split (%)	12.5%	25.0%		15.0%	27.5%		10.0%	50.0%	50.0%	10.0%	50.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	9.8	22.5	120.0	8.1	18.6	120.0	16.6	55.0	55.0	16.6	55.0	120.0
Actuated g/C Ratio	0.08	0.19	1.00	0.07	0.16	1.00	0.14	0.46	0.46	0.14	0.46	1.00
v/c Ratio	0.71	0.58	0.35	0.34	0.71	0.08	0.61	0.46	0.07	0.58	0.87	0.23
Control Delay	68.1	48.7	0.6	56.9	55.2	0.1	55.8	23.4	0.2	61.8	31.5	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	48.7	0.6	56.9	55.2	0.1	55.8	23.4	0.2	61.8	31.5	0.3
LOS	E	D	A	E	E	A	E	C	A	E	C	A
Approach Delay		28.7			44.2			30.9			29.9	
Approach LOS		C			D			C			C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.87	
Intersection Signal Delay: 31.6	Intersection LOS: C
Intersection Capacity Utilization 78.3%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 14: US 24 & Stapleton Dr



Intersection				
Intersection Delay, s/veh	11.4			
Intersection LOS	B			

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	345	645	444	308
Demand Flow Rate, veh/h	351	658	453	314
Vehicles Circulating, veh/h	731	231	217	731
Vehicles Exiting, veh/h	313	439	865	158
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	14.6	11.4	7.7	13.1
Approach LOS	B	B	A	B

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	351	658	453	314
Cap Entry Lane, veh/h	655	1090	1106	655
Entry HV Adj Factor	0.982	0.980	0.980	0.980
Flow Entry, veh/h	345	645	444	308
Cap Entry, veh/h	643	1069	1084	641
V/C Ratio	0.536	0.604	0.410	0.480
Control Delay, s/veh	14.6	11.4	7.7	13.1
LOS	B	B	A	B
95th %tile Queue, veh	3	4	2	3

Intersection	
Intersection Delay, s/veh	6.7
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	431	650	72
Demand Flow Rate, veh/h	439	663	73
Vehicles Circulating, veh/h	19	16	428
Vehicles Exiting, veh/h	660	485	30
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	5.6	7.7	4.9
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	439	663	73
Cap Entry Lane, veh/h	1353	1358	892
Entry HV Adj Factor	0.981	0.981	0.986
Flow Entry, veh/h	431	650	72
Cap Entry, veh/h	1327	1332	880
V/C Ratio	0.324	0.488	0.082
Control Delay, s/veh	5.6	7.7	4.9
LOS	A	A	A
95th %tile Queue, veh	1	3	0

Intersection	
Intersection Delay, s/veh	8.7
Intersection LOS	A

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	55	459	852
Demand Flow Rate, veh/h	56	468	869
Vehicles Circulating, veh/h	454	0	56
Vehicles Exiting, veh/h	14	925	454
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.3	5.5	10.6
Approach LOS	A	A	B

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	56	468	869
Cap Entry Lane, veh/h	965	1420	1354
Entry HV Adj Factor	0.982	0.981	0.980
Flow Entry, veh/h	55	459	852
Cap Entry, veh/h	948	1393	1328
V/C Ratio	0.058	0.330	0.642
Control Delay, s/veh	4.3	5.5	10.6
LOS	A	A	B
95th %tile Queue, veh	0	1	5

Intersection	
Intersection Delay, s/veh	11.2
Intersection LOS	B

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	16	495	1013
Demand Flow Rate, veh/h	16	505	1033
Vehicles Circulating, veh/h	505	6	0
Vehicles Exiting, veh/h	6	1027	521
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	4.6	6.1	13.8
Approach LOS	A	A	B

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	16	505	1033
Cap Entry Lane, veh/h	824	1371	1380
Entry HV Adj Factor	1.000	0.980	0.981
Flow Entry, veh/h	16	495	1013
Cap Entry, veh/h	824	1345	1353
V/C Ratio	0.019	0.368	0.749
Control Delay, s/veh	4.6	6.1	13.8
LOS	A	A	B
95th %tile Queue, veh	0	2	8

Intersection	
Intersection Delay, s/veh	8.8
Intersection LOS	A

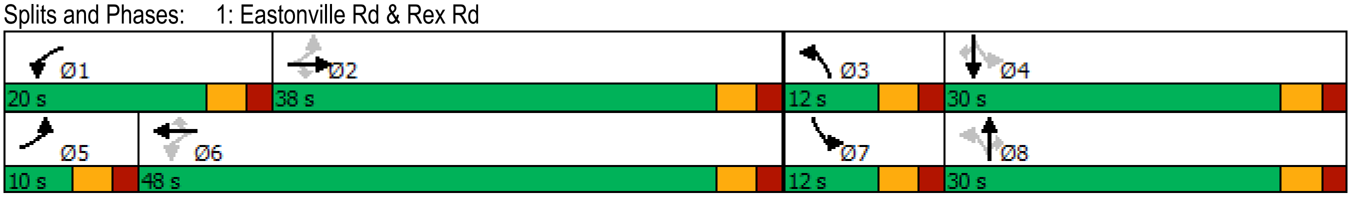
Approach	EB	NB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	390	724	1006
Demand Flow Rate, veh/h	397	738	1027
Vehicles Circulating, veh/h	897	76	365
Vehicles Exiting, veh/h	495	1218	449
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	12.0	5.4	10.0
Approach LOS	B	A	A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	L	TR	LT	TR
Assumed Moves	L	TR	L	TR	LT	TR
RT Channelized						
Lane Util	0.191	0.809	0.495	0.505	0.470	0.530
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	76	321	365	373	483	544
Cap Entry Lane, veh/h	591	662	1259	1331	965	1041
Entry HV Adj Factor	0.987	0.981	0.981	0.980	0.979	0.981
Flow Entry, veh/h	75	315	358	366	473	533
Cap Entry, veh/h	584	650	1235	1305	945	1021
V/C Ratio	0.128	0.485	0.290	0.280	0.501	0.522
Control Delay, s/veh	7.7	13.1	5.6	5.2	10.1	9.9
LOS	A	B	A	A	B	A
95th %tile Queue, veh	0	3	1	1	3	3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	157	148	448	140	25	93	100	229	24	210	59
Future Volume (vph)	23	157	148	448	140	25	93	100	229	24	210	59
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0
Total Split (s)	10.0	38.0	38.0	20.0	48.0	48.0	12.0	30.0	30.0	12.0	30.0	30.0
Total Split (%)	10.0%	38.0%	38.0%	20.0%	48.0%	48.0%	12.0%	30.0%	30.0%	12.0%	30.0%	30.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Act Effct Green (s)	16.9	11.6	11.6	31.0	27.6	27.6	20.4	18.0	18.0	17.8	13.2	13.2
Actuated g/C Ratio	0.27	0.18	0.18	0.49	0.43	0.43	0.32	0.28	0.28	0.28	0.21	0.21
v/c Ratio	0.06	0.49	0.36	0.75	0.18	0.03	0.27	0.20	0.39	0.06	0.57	0.13
Control Delay	12.4	31.0	5.5	22.9	15.9	0.1	16.6	21.5	5.9	14.5	31.2	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.4	31.0	5.5	22.9	15.9	0.1	16.6	21.5	5.9	14.5	31.2	0.6
LOS	B	C	A	C	B	A	B	C	A	B	C	A
Approach Delay		18.2			20.4			11.9			23.7	
Approach LOS		B			C			B			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 63.6	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.75	
Intersection Signal Delay: 18.4	Intersection LOS: B
Intersection Capacity Utilization 66.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Eastonville Rd & Rex Rd



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	71	299	340	348	835	121
Future Volume (vph)	71	299	340	348	835	121
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	21.0	21.0
Total Split (s)	25.0	25.0	20.0	75.0	55.0	55.0
Total Split (%)	25.0%	25.0%	20.0%	75.0%	55.0%	55.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	-1.0	0.0	-2.0	0.0
Total Lost Time (s)	5.0	5.0	4.0	5.0	3.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	Max	Max	Max
Act Effct Green (s)	9.6	9.6	71.1	70.1	52.1	50.1
Actuated g/C Ratio	0.11	0.11	0.79	0.78	0.58	0.56
v/c Ratio	0.40	0.70	0.81	0.25	0.81	0.14
Control Delay	43.3	13.5	32.7	3.5	23.5	5.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.3	13.5	32.7	3.5	23.5	5.3
LOS	D	B	C	A	C	A
Approach Delay	19.2			17.9	21.2	
Approach LOS	B			B	C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 89.7	
Natural Cycle: 90	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 19.7	Intersection LOS: B
Intersection Capacity Utilization 77.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 12: Eastonville Rd & Londonderry Dr

Intersection	
Int Delay, s/veh	19.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	77	195	67	267	195	21	75	246	432	25	163	48
Future Vol, veh/h	77	195	67	267	195	21	75	246	432	25	163	48
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	155	350	-	155	315	-	155	205	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	81	205	71	281	205	22	79	259	455	26	172	51

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	982	1096	172	805	692	259	223	0	0	714	0	0
Stage 1	224	224	-	417	417	-	-	-	-	-	-	-
Stage 2	758	872	-	388	275	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	228	213	872	301	367	780	1346	-	-	886	-	-
Stage 1	779	718	-	613	591	-	-	-	-	-	-	-
Stage 2	399	368	-	636	683	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	107	~ 195	872	-	335	780	1346	-	-	886	-	-
Mov Cap-2 Maneuver	107	~ 195	-	-	335	-	-	-	-	-	-	-
Stage 1	733	697	-	577	556	-	-	-	-	-	-	-
Stage 2	230	346	-	400	663	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	100.1		0.8	1
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1346	-	-	107	195	872	-	335	780	886	-	-
HCM Lane V/C Ratio	0.059	-	-	0.758	1.053	0.081	-	0.613	0.028	0.03	-	-
HCM Control Delay (s)	7.8	-	-	104.3	129.6	9.5	-	31.4	9.8	9.2	-	-
HCM Lane LOS	A	-	-	F	F	A	-	D	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	4.1	9.4	0.3	-	3.8	0.1	0.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	0.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	621	31	55	473	9	32
Future Vol, veh/h	621	31	55	473	9	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	155	-	205	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	675	34	60	514	10	35

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	709	0	1326	692
Stage 1	-	-	-	-	692	-
Stage 2	-	-	-	-	634	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	890	-	172	444
Stage 1	-	-	-	-	497	-
Stage 2	-	-	-	-	529	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	890	-	160	444
Mov Cap-2 Maneuver	-	-	-	-	299	-
Stage 1	-	-	-	-	497	-
Stage 2	-	-	-	-	494	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	14.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	299	444	-	-	890	-
HCM Lane V/C Ratio	0.033	0.078	-	-	0.067	-
HCM Control Delay (s)	17.4	13.8	-	-	9.3	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.1	0.3	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	647	525	21	12	3
Future Vol, veh/h	6	647	525	21	12	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	703	571	23	13	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	594	0	-	0	1300	583
Stage 1	-	-	-	-	583	-
Stage 2	-	-	-	-	717	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	982	-	-	-	178	512
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	484	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	982	-	-	-	177	512
Mov Cap-2 Maneuver	-	-	-	-	316	-
Stage 1	-	-	-	-	554	-
Stage 2	-	-	-	-	484	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	16.1
HCM LOS			C

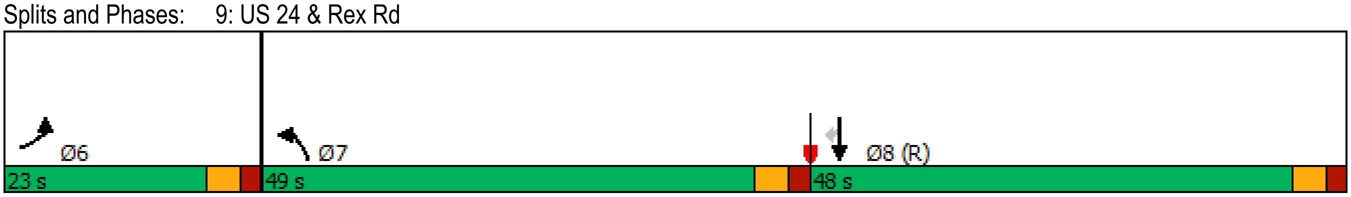
Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	982	-	-	-	342
HCM Lane V/C Ratio	0.007	-	-	-	0.048
HCM Control Delay (s)	8.7	-	-	-	16.1
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	122	773	1102	529	471	129
Future Volume (vph)	122	773	1102	529	471	129
Turn Type	Prot	Free	Prot	NA	NA	Perm
Protected Phases	6!		7	Free!	8	
Permitted Phases		Free				8
Detector Phase	6		7		8	8
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	20.0		10.0		20.0	20.0
Total Split (s)	23.0		49.0		48.0	48.0
Total Split (%)	19.2%		40.8%		40.0%	40.0%
Yellow Time (s)	3.0		3.0		3.0	3.0
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0		5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	Max		None		C-Max	C-Max
Act Effct Green (s)	18.0	120.0	43.2	120.0	43.8	43.8
Actuated g/C Ratio	0.15	1.00	0.36	1.00	0.36	0.36
v/c Ratio	0.48	0.51	0.94	0.15	0.38	0.20
Control Delay	53.6	1.2	43.0	0.0	29.4	5.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.6	1.2	43.0	0.0	29.4	5.1
LOS	D	A	D	A	C	A
Approach Delay	8.3			29.4	24.2	
Approach LOS	A			C	C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 50 (42%), Referenced to phase 8:SBT, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.94	
Intersection Signal Delay: 22.3	Intersection LOS: C
Intersection Capacity Utilization 62.9%	ICU Level of Service B
Analysis Period (min) 15	

! Phase conflict between lane groups.

Splits and Phases: 9: US 24 & Rex Rd



Intersection	
Int Delay, s/veh	0.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	33	0	781	38	0	503
Future Vol, veh/h	33	0	781	38	0	503
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	35	0	822	40	0	529

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1351	822	0	0	862	0
Stage 1	822	-	-	-	-	-
Stage 2	529	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	166	374	-	-	780	-
Stage 1	432	-	-	-	-	-
Stage 2	591	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	166	374	-	-	780	-
Mov Cap-2 Maneuver	301	-	-	-	-	-
Stage 1	432	-	-	-	-	-
Stage 2	591	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	18.5	0	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	301	-	780	-
HCM Lane V/C Ratio	-	-	0.115	-	-	-
HCM Control Delay (s)	-	-	18.5	0	0	-
HCM Lane LOS	-	-	C	A	A	-
HCM 95th %tile Q(veh)	-	-	0.4	-	0	-

Intersection	
Int Delay, s/veh	0.2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	9	810	0	16	519
Future Vol, veh/h	0	9	810	0	16	519
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	115	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	11	953	0	19	611

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1602	953	0	0	953	0
Stage 1	953	-	-	-	-	-
Stage 2	649	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	116	314	-	-	721	-
Stage 1	375	-	-	-	-	-
Stage 2	520	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	113	314	-	-	721	-
Mov Cap-2 Maneuver	247	-	-	-	-	-
Stage 1	375	-	-	-	-	-
Stage 2	506	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	16.9	0	0.3
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	-	314	721	-
HCM Lane V/C Ratio	-	-	-	0.034	0.026	-
HCM Control Delay (s)	-	-	0	16.9	10.1	-
HCM Lane LOS	-	-	A	C	B	-
HCM 95th %tile Q(veh)	-	-	-	0.1	0.1	-

Intersection						
Int Delay, s/veh	13.2					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	131	177	347	779	463	85
Future Vol, veh/h	131	177	347	779	463	85
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	0	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	138	186	365	820	487	89

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2037	487	576	0	-	0
Stage 1	487	-	-	-	-	-
Stage 2	1550	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 62	581	997	-	-	-
Stage 1	618	-	-	-	-	-
Stage 2	193	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 39	581	997	-	-	-
Mov Cap-2 Maneuver	~ 133	-	-	-	-	-
Stage 1	392	-	-	-	-	-
Stage 2	193	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	73.2	3.3	0
HCM LOS	F		

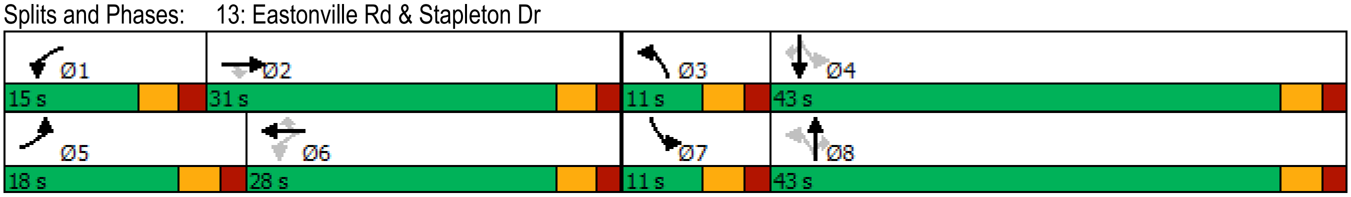
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	997	-	133	581	-	-
HCM Lane V/C Ratio	0.366	-	1.037	0.321	-	-
HCM Control Delay (s)	10.7	-	153	14.1	-	-
HCM Lane LOS	B	-	F	B	-	-
HCM 95th %tile Q(veh)	1.7	-	7.5	1.4	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	354	553	160	194	718	218	251	554	179	110	319	211
Future Volume (vph)	354	553	160	194	718	218	251	554	179	110	319	211
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	18.0	31.0	31.0	15.0	28.0	28.0	11.0	43.0	43.0	11.0	43.0	43.0
Total Split (%)	18.0%	31.0%	31.0%	15.0%	28.0%	28.0%	11.0%	43.0%	43.0%	11.0%	43.0%	43.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	-2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	12.7	25.3	25.3	31.9	24.2	22.2	40.0	34.0	34.0	40.0	34.0	34.0
Actuated g/C Ratio	0.13	0.27	0.27	0.34	0.25	0.23	0.42	0.36	0.36	0.42	0.36	0.36
v/c Ratio	0.81	0.62	0.31	0.65	0.84	0.42	0.68	0.88	0.27	0.59	0.51	0.31
Control Delay	56.4	34.8	6.4	30.7	44.0	7.2	28.5	44.5	4.3	27.3	27.0	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.4	34.8	6.4	30.7	44.0	7.2	28.5	44.5	4.3	27.3	27.0	4.2
LOS	E	C	A	C	D	A	C	D	A	C	C	A
Approach Delay		37.7			34.6			33.1			19.5	
Approach LOS		D			C			C			B	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 95.1	
Natural Cycle: 75	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.88	
Intersection Signal Delay: 32.6	Intersection LOS: C
Intersection Capacity Utilization 81.0%	ICU Level of Service D
Analysis Period (min) 15	

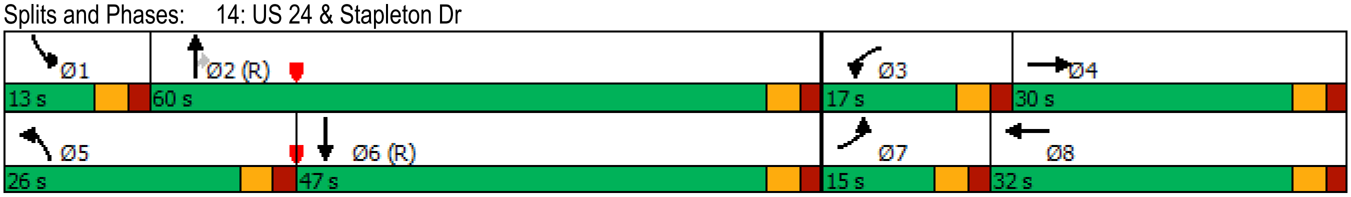
Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	372	349	339	125	499	316	579	1449	150	241	1022	377
Future Volume (vph)	372	349	339	125	499	316	579	1449	150	241	1022	377
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			2			Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		10.0	11.0	11.0	10.0	11.0	
Total Split (s)	15.0	30.0		17.0	32.0		26.0	60.0	60.0	13.0	47.0	
Total Split (%)	12.5%	25.0%		14.2%	26.7%		21.7%	50.0%	50.0%	10.8%	39.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	10.0	23.2	120.0	9.8	23.0	120.0	24.4	55.0	55.0	12.0	42.6	120.0
Actuated g/C Ratio	0.08	0.19	1.00	0.08	0.19	1.00	0.20	0.46	0.46	0.10	0.36	1.00
v/c Ratio	1.37	0.54	0.23	0.47	0.77	0.21	0.87	0.94	0.20	0.74	0.83	0.25
Control Delay	228.6	46.5	0.3	57.9	54.1	0.3	61.3	43.5	6.3	70.5	34.0	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	228.6	46.5	0.3	57.9	54.1	0.3	61.3	43.5	6.3	70.5	34.0	0.4
LOS	F	D	A	E	D	A	E	D	A	E	C	A
Approach Delay		95.7			36.5			45.6			31.6	
Approach LOS		F			D			D			C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.37	
Intersection Signal Delay: 49.4	Intersection LOS: D
Intersection Capacity Utilization 88.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 14: US 24 & Stapleton Dr



Intersection	
Intersection Delay, s/veh	15.3
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	357	508	793	249
Demand Flow Rate, veh/h	364	518	809	254
Vehicles Circulating, veh/h	489	428	319	577
Vehicles Exiting, veh/h	342	700	534	369
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	9.9	12.6	21.4	8.8
Approach LOS	A	B	C	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	364	518	809	254
Cap Entry Lane, veh/h	838	892	997	766
Entry HV Adj Factor	0.980	0.981	0.980	0.979
Flow Entry, veh/h	357	508	793	249
Cap Entry, veh/h	822	874	977	750
V/C Ratio	0.434	0.581	0.812	0.332
Control Delay, s/veh	9.9	12.6	21.4	8.8
LOS	A	B	C	A
95th %tile Queue, veh	2	4	9	1

Intersection			
Intersection Delay, s/veh	7.8		
Intersection LOS	A		

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	687	556	43
Demand Flow Rate, veh/h	701	567	44
Vehicles Circulating, veh/h	59	9	667
Vehicles Exiting, veh/h	517	702	93
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	8.8	6.6	5.9
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	701	567	44
Cap Entry Lane, veh/h	1299	1367	699
Entry HV Adj Factor	0.980	0.981	0.977
Flow Entry, veh/h	687	556	43
Cap Entry, veh/h	1273	1341	683
V/C Ratio	0.540	0.415	0.063
Control Delay, s/veh	8.8	6.6	5.9
LOS	A	A	A
95th %tile Queue, veh	3	2	0

Intersection	
Intersection Delay, s/veh	8.4
Intersection LOS	A

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	35	862	529
Demand Flow Rate, veh/h	36	879	540
Vehicles Circulating, veh/h	838	0	36
Vehicles Exiting, veh/h	41	576	838
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	5.9	9.8	6.3
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	36	879	540
Cap Entry Lane, veh/h	697	1420	1377
Entry HV Adj Factor	0.972	0.980	0.980
Flow Entry, veh/h	35	862	529
Cap Entry, veh/h	677	1392	1350
V/C Ratio	0.052	0.619	0.392
Control Delay, s/veh	5.9	9.8	6.3
LOS	A	A	A
95th %tile Queue, veh	0	5	2

Intersection	
Intersection Delay, s/veh	10.6
Intersection LOS	B

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	11	953	630
Demand Flow Rate, veh/h	11	972	642
Vehicles Circulating, veh/h	972	19	0
Vehicles Exiting, veh/h	19	623	983
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.3	12.9	7.3
Approach LOS	A	B	A

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	11	972	642
Cap Entry Lane, veh/h	512	1353	1380
Entry HV Adj Factor	1.000	0.980	0.981
Flow Entry, veh/h	11	953	630
Cap Entry, veh/h	512	1327	1354
V/C Ratio	0.021	0.718	0.465
Control Delay, s/veh	7.3	12.9	7.3
LOS	A	B	A
95th %tile Queue, veh	0	7	3

Intersection						
Intersection Delay, s/veh	8.5					
Intersection LOS	A					

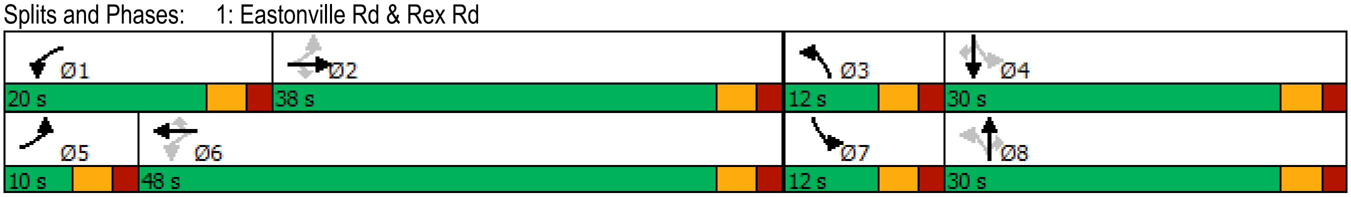
Approach		EB		NB		SB
Entry Lanes		2		2		2
Conflicting Circle Lanes		2		2		2
Adj Approach Flow, veh/h		324		1185		576
Demand Flow Rate, veh/h		331		1208		588
Vehicles Circulating, veh/h		497		141		372
Vehicles Exiting, veh/h		463		687		977
Ped Vol Crossing Leg, #/h		0		0		0
Ped Cap Adj		1.000		1.000		1.000
Approach Delay, s/veh		6.0		10.0		6.7
Approach LOS		A		B		A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	L	TR	LT	TR
Assumed Moves	L	TR	L	TR	LT	TR
RT Channelized						
Lane Util	0.426	0.574	0.308	0.692	0.469	0.531
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	141	190	372	836	276	312
Cap Entry Lane, veh/h	855	931	1186	1260	959	1035
Entry HV Adj Factor	0.979	0.979	0.981	0.980	0.981	0.979
Flow Entry, veh/h	138	186	365	820	271	305
Cap Entry, veh/h	836	911	1163	1235	941	1013
V/C Ratio	0.165	0.204	0.314	0.664	0.288	0.301
Control Delay, s/veh	6.0	6.0	6.1	11.8	6.8	6.6
LOS	A	A	A	B	A	A
95th %tile Queue, veh	1	1	1	5	1	1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	195	67	267	195	21	75	246	432	25	163	48
Future Volume (vph)	77	195	67	267	195	21	75	246	432	25	163	48
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0
Total Split (s)	10.0	38.0	38.0	20.0	48.0	48.0	12.0	30.0	30.0	12.0	30.0	30.0
Total Split (%)	10.0%	38.0%	38.0%	20.0%	48.0%	48.0%	12.0%	30.0%	30.0%	12.0%	30.0%	30.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Act Effct Green (s)	18.4	13.0	13.0	30.4	23.0	23.0	21.5	19.3	19.3	18.9	14.2	14.2
Actuated g/C Ratio	0.29	0.20	0.20	0.47	0.36	0.36	0.33	0.30	0.30	0.29	0.22	0.22
v/c Ratio	0.21	0.55	0.15	0.51	0.31	0.03	0.19	0.46	0.57	0.07	0.42	0.10
Control Delay	14.4	32.0	0.7	16.2	20.2	0.1	15.4	24.0	5.9	14.5	27.1	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.4	32.0	0.7	16.2	20.2	0.1	15.4	24.0	5.9	14.5	27.1	0.4
LOS	B	C	A	B	C	A	B	C	A	B	C	A
Approach Delay		21.8			17.1			12.8			20.3	
Approach LOS		C			B			B			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 64.3	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 16.6	Intersection LOS: B
Intersection Capacity Utilization 58.8%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Eastonville Rd & Rex Rd



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	131	177	347	779	463	85
Future Volume (vph)	131	177	347	779	463	85
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	21.0	21.0
Total Split (s)	25.0	25.0	20.0	75.0	55.0	55.0
Total Split (%)	25.0%	25.0%	20.0%	75.0%	55.0%	55.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	10.5	10.5	40.8	40.8	21.8	21.8
Actuated g/C Ratio	0.17	0.17	0.66	0.66	0.35	0.35
v/c Ratio	0.46	0.44	0.63	0.67	0.74	0.14
Control Delay	31.1	8.5	11.9	9.7	25.1	4.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.1	8.5	11.9	9.7	25.1	4.2
LOS	C	A	B	A	C	A
Approach Delay	18.1			10.4	21.9	
Approach LOS	B			B	C	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 61.7
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 14.8 Intersection LOS: B
Intersection Capacity Utilization 63.4% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 12: Eastonville Rd & Londonderry Dr

Intersection	
Int Delay, s/veh	408.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	23	163	150	453	149	28	99	102	243	26	211	59
Future Vol, veh/h	23	163	150	453	149	28	99	102	243	26	211	59
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	155	350	-	155	315	-	155	205	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	24	172	158	477	157	29	104	107	256	27	222	62

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	812	847	222	787	653	107	284	0	0	363	0	0
Stage 1	276	276	-	315	315	-	-	-	-	-	-	-
Stage 2	536	571	-	472	338	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	298	299	818	~ 309	387	947	1278	-	-	1196	-	-
Stage 1	730	682	-	696	656	-	-	-	-	-	-	-
Stage 2	529	505	-	573	641	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	173	269	818	~ 114	348	947	1278	-	-	1196	-	-
Mov Cap-2 Maneuver	173	269	-	~ 114	348	-	-	-	-	-	-	-
Stage 1	671	666	-	640	603	-	-	-	-	-	-	-
Stage 2	348	464	-	~ 336	626	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	25.8	$ 1091.2	1.8	0.7
HCM LOS	D	F		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1278	-	-	173	269	818	114	348	947	1196	-	-
HCM Lane V/C Ratio	0.082	-	-	0.14	0.638	0.193	4.183	0.451	0.031	0.023	-	-
HCM Control Delay (s)	8.1	-	-	29.2	39.3	10.5	$ 1509.2	23.6	8.9	8.1	-	-
HCM Lane LOS	A	-	-	D	E	B	F	C	A	A	-	-
HCM 95th %tile Q(veh)	0.3	-	-	0.5	4	0.7	49	2.2	0.1	0.1	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	401	31	56	599	31	127
Future Vol, veh/h	401	31	56	599	31	127
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	155	-	205	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	436	34	61	651	34	138

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	470	0	1226	453
Stage 1	-	-	-	-	453	-
Stage 2	-	-	-	-	773	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1092	-	197	607
Stage 1	-	-	-	-	640	-
Stage 2	-	-	-	-	455	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1092	-	186	607
Mov Cap-2 Maneuver	-	-	-	-	315	-
Stage 1	-	-	-	-	640	-
Stage 2	-	-	-	-	430	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	13.7
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	315	607	-	-	1092	-
HCM Lane V/C Ratio	0.107	0.227	-	-	0.056	-
HCM Control Delay (s)	17.8	12.7	-	-	8.5	-
HCM Lane LOS	C	B	-	-	A	-
HCM 95th %tile Q(veh)	0.4	0.9	-	-	0.2	-

Intersection						
Int Delay, s/veh	0.3					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	2	526	650	7	20	5
Future Vol, veh/h	2	526	650	7	20	5
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	2	572	707	8	22	5

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	715	0	-	0	1287	711
Stage 1	-	-	-	-	711	-
Stage 2	-	-	-	-	576	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	885	-	-	-	181	433
Stage 1	-	-	-	-	487	-
Stage 2	-	-	-	-	562	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	885	-	-	-	181	433
Mov Cap-2 Maneuver	-	-	-	-	320	-
Stage 1	-	-	-	-	486	-
Stage 2	-	-	-	-	562	-

Approach	EB	WB	SB
HCM Control Delay, s	0	0	16.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	885	-	-	-	338
HCM Lane V/C Ratio	0.002	-	-	-	0.08
HCM Control Delay (s)	9.1	-	-	-	16.6
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	194	4	441	58	1	816
Future Vol, veh/h	194	4	441	58	1	816
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	204	4	464	61	1	859

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1325	464	0	0	525	0
Stage 1	464	-	-	-	-	-
Stage 2	861	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	~ 172	598	-	-	1042	-
Stage 1	633	-	-	-	-	-
Stage 2	414	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	~ 172	598	-	-	1042	-
Mov Cap-2 Maneuver	302	-	-	-	-	-
Stage 1	633	-	-	-	-	-
Stage 2	414	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	38	0	0
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	302	598	1042	-
HCM Lane V/C Ratio	-	-	0.676	0.007	0.001	-
HCM Control Delay (s)	-	-	38.6	11.1	8.5	-
HCM Lane LOS	-	-	E	B	A	-
HCM 95th %tile Q(veh)	-	-	4.6	0	0	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection						
Int Delay, s/veh	1.4					

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	60	19	480	20	7	1002
Future Vol, veh/h	60	19	480	20	7	1002
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	115	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	71	22	565	24	8	1179

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1760	565	0	0	589	0
Stage 1	565	-	-	-	-	-
Stage 2	1195	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	93	524	-	-	986	-
Stage 1	569	-	-	-	-	-
Stage 2	287	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	92	524	-	-	986	-
Mov Cap-2 Maneuver	209	-	-	-	-	-
Stage 1	569	-	-	-	-	-
Stage 2	285	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.3	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	209	524	986	-
HCM Lane V/C Ratio	-	-	0.338	0.043	0.008	-
HCM Control Delay (s)	-	-	30.8	12.2	8.7	-
HCM Lane LOS	-	-	D	B	A	-
HCM 95th %tile Q(veh)	-	-	1.4	0.1	0	-

Intersection	
Int Delay, s/veh	29.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	77	299	340	420	1030	132
Future Vol, veh/h	77	299	340	420	1030	132
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	0	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	81	315	358	442	1084	139

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2242	1084	1223	0	-	0
Stage 1	1084	-	-	-	-	-
Stage 2	1158	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 46	~ 264	570	-	-	-
Stage 1	324	-	-	-	-	-
Stage 2	299	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 17	~ 264	570	-	-	-
Mov Cap-2 Maneuver	85	-	-	-	-	-
Stage 1	121	-	-	-	-	-
Stage 2	299	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	160.6	9.6	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	570	-	85	264	-	-
HCM Lane V/C Ratio	0.628	-	0.954	1.192	-	-
HCM Control Delay (s)	21.4	-	172.1	157.7	-	-
HCM Lane LOS	C	-	F	F	-	-
HCM 95th %tile Q(veh)	4.3	-	5.3	14.5	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	22	2	1	136	60	27
Future Vol, veh/h	22	2	1	136	60	27
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	205	-	-	205
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	24	2	1	148	65	29

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	215	65	94	0	-	0
Stage 1	65	-	-	-	-	-
Stage 2	150	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	773	999	1500	-	-	-
Stage 1	958	-	-	-	-	-
Stage 2	878	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	772	999	1500	-	-	-
Mov Cap-2 Maneuver	772	-	-	-	-	-
Stage 1	957	-	-	-	-	-
Stage 2	878	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.7	0.1	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1500	-	787	-	-
HCM Lane V/C Ratio	0.001	-	0.033	-	-
HCM Control Delay (s)	7.4	-	9.7	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	2	0	136	53	9
Future Vol, veh/h	0	2	0	136	53	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	2	0	148	58	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	63	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	1002	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	1002	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	8.6	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	1002	-	-
HCM Lane V/C Ratio	-	0.002	-	-
HCM Control Delay (s)	-	8.6	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	4.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	69	4	27	67	28	28
Future Vol, veh/h	69	4	27	67	28	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	75	4	29	73	30	30

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	102	0	-	0	220	66
Stage 1	-	-	-	-	66	-
Stage 2	-	-	-	-	154	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1490	-	-	-	768	998
Stage 1	-	-	-	-	957	-
Stage 2	-	-	-	-	874	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1490	-	-	-	730	998
Mov Cap-2 Maneuver	-	-	-	-	730	-
Stage 1	-	-	-	-	909	-
Stage 2	-	-	-	-	874	-

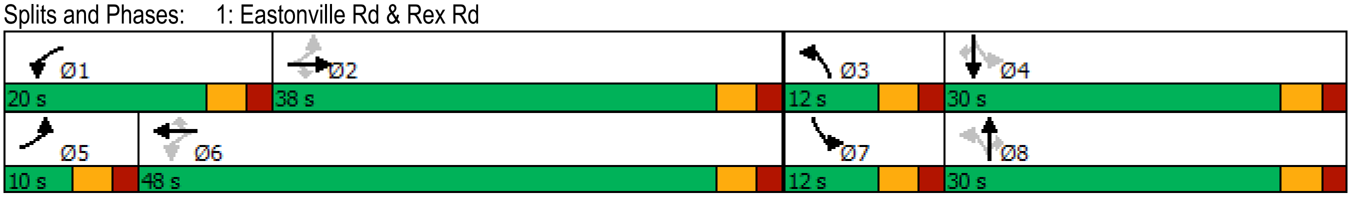
Approach	EB	WB	SB
HCM Control Delay, s	7.1	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1490	-	-	-	730	998
HCM Lane V/C Ratio	0.05	-	-	-	0.042	0.03
HCM Control Delay (s)	7.5	0	-	-	10.1	8.7
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.2	-	-	-	0.1	0.1

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	163	150	453	149	28	99	102	243	26	211	59
Future Volume (vph)	23	163	150	453	149	28	99	102	243	26	211	59
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0
Total Split (s)	10.0	38.0	38.0	20.0	48.0	48.0	12.0	30.0	30.0	12.0	30.0	30.0
Total Split (%)	10.0%	38.0%	38.0%	20.0%	48.0%	48.0%	12.0%	30.0%	30.0%	12.0%	30.0%	30.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Act Effct Green (s)	17.1	11.9	11.9	31.3	27.9	27.9	20.4	18.0	18.0	17.9	13.2	13.2
Actuated g/C Ratio	0.27	0.19	0.19	0.49	0.44	0.44	0.32	0.28	0.28	0.28	0.21	0.21
v/c Ratio	0.06	0.50	0.36	0.76	0.19	0.04	0.29	0.20	0.41	0.07	0.58	0.13
Control Delay	12.3	31.2	5.6	23.6	15.9	0.1	17.0	21.6	5.9	14.8	31.5	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.3	31.2	5.6	23.6	15.9	0.1	17.0	21.6	5.9	14.8	31.5	0.6
LOS	B	C	A	C	B	A	B	C	A	B	C	A
Approach Delay		18.5			20.8			12.0			23.8	
Approach LOS		B			C			B			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 64	
Natural Cycle: 65	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 18.6	Intersection LOS: B
Intersection Capacity Utilization 66.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 1: Eastonville Rd & Rex Rd

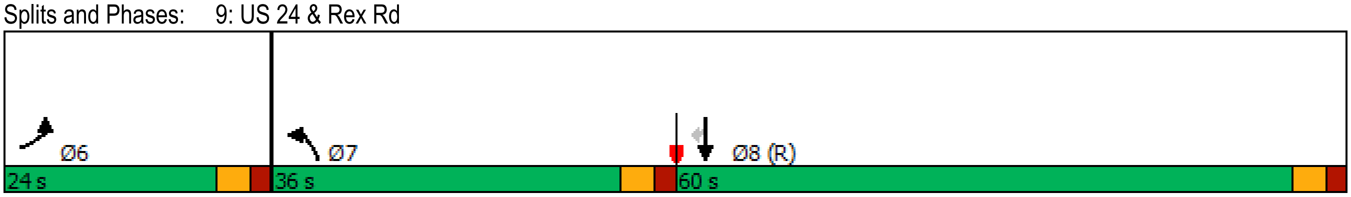


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	105	1064	523	385	536	85
Future Volume (vph)	105	1064	523	385	536	85
Turn Type	Prot	Free	Prot	NA	NA	Perm
Protected Phases	6!		7	Free!	8	
Permitted Phases		Free				8
Detector Phase	6		7		8	8
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	20.0		10.0		20.0	20.0
Total Split (s)	24.0		36.0		60.0	60.0
Total Split (%)	20.0%		30.0%		50.0%	50.0%
Yellow Time (s)	3.0		3.0		3.0	3.0
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0		5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	Max		None		C-Max	C-Max
Act Effct Green (s)	19.0	120.0	24.4	120.0	61.6	61.6
Actuated g/C Ratio	0.16	1.00	0.20	1.00	0.51	0.51
v/c Ratio	0.40	0.71	0.79	0.11	0.31	0.10
Control Delay	50.2	2.7	41.1	0.1	18.1	3.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.2	2.7	41.1	0.1	18.1	3.8
LOS	D	A	D	A	B	A
Approach Delay	7.0			24.0	16.2	
Approach LOS	A			C	B	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 50 (42%), Referenced to phase 8:SBT, Start of Green	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 14.8	Intersection LOS: B
Intersection Capacity Utilization 47.2%	ICU Level of Service A
Analysis Period (min) 15	

! Phase conflict between lane groups.

Splits and Phases: 9: US 24 & Rex Rd



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	194	4	441	58	1	816
Future Volume (vph)	194	4	441	58	1	816
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	25.0	25.0	65.0	65.0	65.0	65.0
Total Split (%)	27.8%	27.8%	72.2%	72.2%	72.2%	72.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
Act Effct Green (s)	14.7	14.7	60.1	60.1	60.1	60.1
Actuated g/C Ratio	0.17	0.17	0.71	0.71	0.71	0.71
v/c Ratio	0.67	0.01	0.35	0.05	0.00	0.65
Control Delay	43.8	18.2	6.2	1.5	5.0	10.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.8	18.2	6.2	1.5	5.0	10.4
LOS	D	B	A	A	A	B
Approach Delay	43.3		5.7			10.4
Approach LOS	D		A			B

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 84.8	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 13.1	Intersection LOS: B
Intersection Capacity Utilization 62.0%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 10: Eastonville Rd & Dawlish Dr

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	77	299	340	420	1030	132
Future Volume (vph)	77	299	340	420	1030	132
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	20.0	20.0	22.0	80.0	58.0	58.0
Total Split (%)	20.0%	20.0%	22.0%	80.0%	58.0%	58.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	-2.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	3.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	9.9	9.9	75.1	75.1	55.1	53.1
Actuated g/C Ratio	0.10	0.10	0.79	0.79	0.58	0.56
v/c Ratio	0.44	0.70	0.91	0.30	1.00	0.15
Control Delay	47.2	14.0	54.4	3.6	50.4	6.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	47.2	14.0	54.4	3.6	50.4	6.1
LOS	D	B	D	A	D	A
Approach Delay	20.8			26.4	45.4	
Approach LOS	C			C	D	

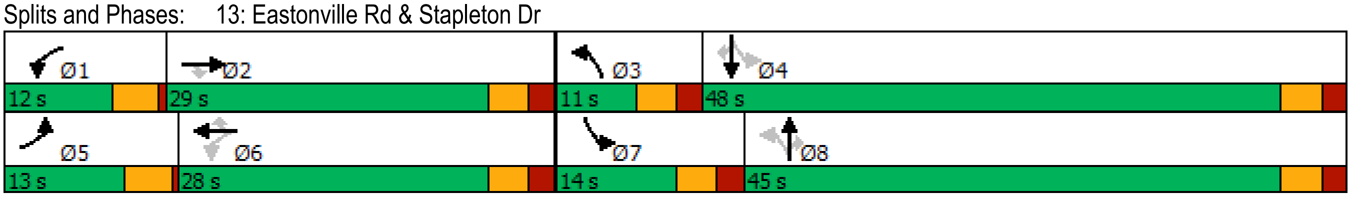
Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 95	
Natural Cycle: 90	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 35.1	Intersection LOS: D
Intersection Capacity Utilization 89.0%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 12: Eastonville Rd & Londonderry Dr

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	170	600	224	145	482	170	108	419	188	207	731	391
Future Volume (vph)	170	600	224	145	482	170	108	419	188	207	731	391
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	8.0	21.0	21.0	8.0	21.0	21.0	9.0	21.0	21.0	9.0	21.0	21.0
Total Split (s)	13.0	29.0	29.0	12.0	28.0	28.0	11.0	45.0	45.0	14.0	48.0	48.0
Total Split (%)	13.0%	29.0%	29.0%	12.0%	28.0%	28.0%	11.0%	45.0%	45.0%	14.0%	48.0%	48.0%
Yellow Time (s)	3.5	3.0	3.0	3.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	0.5	2.0	2.0	0.5	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	5.0	5.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	8.7	22.0	22.0	30.2	21.3	21.3	45.4	39.4	39.4	51.0	42.2	42.2
Actuated g/C Ratio	0.09	0.23	0.23	0.31	0.22	0.22	0.47	0.41	0.41	0.52	0.43	0.43
v/c Ratio	0.58	0.79	0.44	0.67	0.66	0.37	0.61	0.58	0.26	0.53	0.95	0.48
Control Delay	51.5	43.5	7.4	38.8	39.3	7.3	29.2	26.8	3.8	17.0	50.0	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.5	43.5	7.4	38.8	39.3	7.3	29.2	26.8	3.8	17.0	50.0	7.0
LOS	D	D	A	D	D	A	C	C	A	B	D	A
Approach Delay		36.7			32.4			21.1			32.2	
Approach LOS		D			C			C			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 97.2	
Natural Cycle: 80	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 31.3	Intersection LOS: C
Intersection Capacity Utilization 84.9%	ICU Level of Service E
Analysis Period (min) 15	

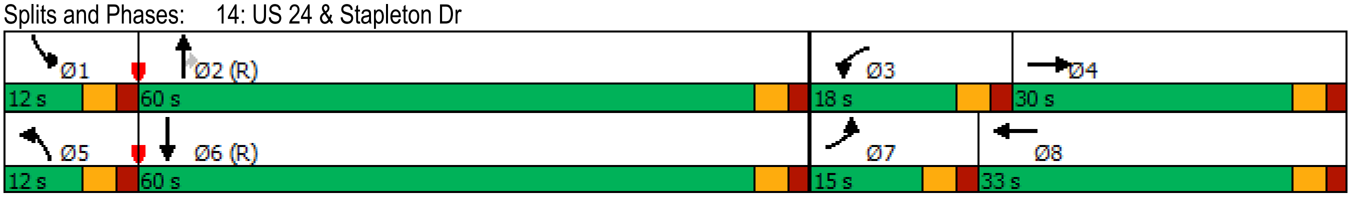
Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	188	379	583	75	375	121	295	739	50	272	1460	352
Future Volume (vph)	188	379	583	75	375	121	295	739	50	272	1460	352
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			2			Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		10.0	11.0	11.0	10.0	11.0	
Total Split (s)	15.0	30.0		18.0	33.0		12.0	60.0	60.0	12.0	60.0	
Total Split (%)	12.5%	25.0%		15.0%	27.5%		10.0%	50.0%	50.0%	10.0%	50.0%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	9.8	22.7	120.0	8.1	18.9	120.0	16.3	55.0	55.0	16.3	55.0	120.0
Actuated g/C Ratio	0.08	0.19	1.00	0.07	0.16	1.00	0.14	0.46	0.46	0.14	0.46	1.00
v/c Ratio	0.71	0.60	0.39	0.34	0.71	0.08	0.67	0.48	0.07	0.61	0.92	0.23
Control Delay	68.1	48.9	0.7	56.9	54.9	0.1	57.9	23.8	0.2	62.3	35.6	0.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.1	48.9	0.7	56.9	54.9	0.1	57.9	23.8	0.2	62.3	35.6	0.3
LOS	E	D	A	E	D	A	E	C	A	E	D	A
Approach Delay		27.6			43.6			32.0			33.0	
Approach LOS		C			D			C			C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.92	
Intersection Signal Delay: 32.8	Intersection LOS: C
Intersection Capacity Utilization 81.2%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 14: US 24 & Stapleton Dr



Intersection	
Intersection Delay, s/veh	11.9
Intersection LOS	B

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	354	663	467	311
Demand Flow Rate, veh/h	360	677	476	317
Vehicles Circulating, veh/h	741	239	227	753
Vehicles Exiting, veh/h	329	464	874	163
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	15.3	12.0	8.1	13.7
Approach LOS	C	B	A	B

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	360	677	476	317
Cap Entry Lane, veh/h	648	1081	1095	640
Entry HV Adj Factor	0.982	0.979	0.981	0.980
Flow Entry, veh/h	354	663	467	311
Cap Entry, veh/h	636	1059	1074	627
V/C Ratio	0.555	0.626	0.435	0.495
Control Delay, s/veh	15.3	12.0	8.1	13.7
LOS	C	B	A	B
95th %tile Queue, veh	3	5	2	3

Intersection	
Intersection Delay, s/veh	7.4
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	455	690	167
Demand Flow Rate, veh/h	464	704	171
Vehicles Circulating, veh/h	60	34	430
Vehicles Exiting, veh/h	678	567	94
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.2	8.4	6.1
Approach LOS	A	A	A

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	464	704	171
Cap Entry Lane, veh/h	1298	1333	890
Entry HV Adj Factor	0.980	0.981	0.977
Flow Entry, veh/h	455	690	167
Cap Entry, veh/h	1272	1307	869
V/C Ratio	0.357	0.528	0.192
Control Delay, s/veh	6.2	8.4	6.1
LOS	A	A	A
95th %tile Queue, veh	2	3	1

Intersection	
Intersection Delay, s/veh	10.8
Intersection LOS	B

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	208	525	860
Demand Flow Rate, veh/h	212	535	877
Vehicles Circulating, veh/h	473	1	208
Vehicles Exiting, veh/h	63	1084	477
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.1	6.0	14.9
Approach LOS	A	A	B

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	212	535	877
Cap Entry Lane, veh/h	950	1419	1190
Entry HV Adj Factor	0.981	0.981	0.980
Flow Entry, veh/h	208	525	860
Cap Entry, veh/h	932	1392	1167
V/C Ratio	0.223	0.377	0.737
Control Delay, s/veh	6.1	6.0	14.9
LOS	A	A	B
95th %tile Queue, veh	1	2	7

Intersection	
Intersection Delay, s/veh	22.9
Intersection LOS	C

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	93	589	1187
Demand Flow Rate, veh/h	94	600	1211
Vehicles Circulating, veh/h	576	8	72
Vehicles Exiting, veh/h	32	1275	598
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	6.0	6.9	32.2
Approach LOS	A	A	D

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	94	600	1211
Cap Entry Lane, veh/h	767	1369	1282
Entry HV Adj Factor	0.989	0.981	0.981
Flow Entry, veh/h	93	589	1187
Cap Entry, veh/h	759	1343	1257
V/C Ratio	0.123	0.438	0.945
Control Delay, s/veh	6.0	6.9	32.2
LOS	A	A	D
95th %tile Queue, veh	0	2	17

Intersection	
Intersection Delay, s/veh	11.0
Intersection LOS	B

Approach	EB	NB	SB
Entry Lanes	2	2	2
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	396	800	1223
Demand Flow Rate, veh/h	404	816	1248
Vehicles Circulating, veh/h	1106	83	365
Vehicles Exiting, veh/h	507	1427	534
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	16.5	5.8	12.6
Approach LOS	C	A	B

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	L	TR	LT	TR
Assumed Moves	L	TR	L	TR	LT	TR
RT Channelized						
Lane Util	0.205	0.795	0.447	0.553	0.470	0.530
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	83	321	365	451	587	661
Cap Entry Lane, veh/h	488	555	1251	1323	965	1041
Entry HV Adj Factor	0.976	0.981	0.981	0.980	0.979	0.981
Flow Entry, veh/h	81	315	358	442	575	648
Cap Entry, veh/h	476	544	1227	1297	945	1021
V/C Ratio	0.170	0.579	0.292	0.341	0.608	0.635
Control Delay, s/veh	10.0	18.2	5.6	5.9	12.6	12.6
LOS	A	C	A	A	B	B
95th %tile Queue, veh	1	4	1	2	4	5

Intersection	
Int Delay, s/veh	24.8

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	77	205	73	280	203	24	78	247	447	28	165	48
Future Vol, veh/h	77	205	73	280	203	24	78	247	447	28	165	48
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	205	-	155	350	-	155	315	-	155	205	-	155
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	81	216	77	295	214	25	82	260	471	29	174	51

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	1011	1127	174	828	707	260	225	0	0	731	0	0
Stage 1	232	232	-	424	424	-	-	-	-	-	-	-
Stage 2	779	895	-	404	283	-	-	-	-	-	-	-
Critical Hdwy	7.12	6.52	6.22	7.12	6.52	6.22	4.12	-	-	4.12	-	-
Critical Hdwy Stg 1	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.12	5.52	-	6.12	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.518	4.018	3.318	3.518	4.018	3.318	2.218	-	-	2.218	-	-
Pot Cap-1 Maneuver	218	~ 205	869	~ 290	360	779	1344	-	-	873	-	-
Stage 1	771	713	-	608	587	-	-	-	-	-	-	-
Stage 2	389	359	-	623	677	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	94	~ 186	869	-	327	779	1344	-	-	873	-	-
Mov Cap-2 Maneuver	94	~ 186	-	-	327	-	-	-	-	-	-	-
Stage 1	724	689	-	571	551	-	-	-	-	-	-	-
Stage 2	216	337	-	377	655	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	128.5		0.8	1.1
HCM LOS	F	-		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	EBLn2	EBLn3	WBLn1	WBLn2	WBLn3	SBL	SBT	SBR
Capacity (veh/h)	1344	-	-	94	186	869	-	327	779	873	-	-
HCM Lane V/C Ratio	0.061	-	-	0.862	1.16	0.088	-	0.653	0.032	0.034	-	-
HCM Control Delay (s)	7.9	-	-	138.1	167.2	9.5	-	34.6	9.8	9.3	-	-
HCM Lane LOS	A	-	-	F	F	A	-	D	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	-	4.8	11	0.3	-	4.3	0.1	0.1	-	-

Notes

~: Volume exceeds capacity $: Delay exceeds 300s +: Computation Not Defined *: All major volume in platoon

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	624	57	141	479	27	95
Future Vol, veh/h	624	57	141	479	27	95
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	155	-	205	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	678	62	153	521	29	103

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	740	0	1536	709
Stage 1	-	-	-	-	709	-
Stage 2	-	-	-	-	827	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	867	-	128	434
Stage 1	-	-	-	-	488	-
Stage 2	-	-	-	-	430	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	867	-	105	434
Mov Cap-2 Maneuver	-	-	-	-	234	-
Stage 1	-	-	-	-	488	-
Stage 2	-	-	-	-	354	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.3	17.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	234	434	-	-	867	-
HCM Lane V/C Ratio	0.125	0.238	-	-	0.177	-
HCM Control Delay (s)	22.6	15.9	-	-	10	-
HCM Lane LOS	C	C	-	-	B	-
HCM 95th %tile Q(veh)	0.4	0.9	-	-	0.6	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	6	712	618	21	12	3
Future Vol, veh/h	6	712	618	21	12	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	155	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	7	774	672	23	13	3

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	695	0	-	0	1472	684
Stage 1	-	-	-	-	684	-
Stage 2	-	-	-	-	788	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	901	-	-	-	140	449
Stage 1	-	-	-	-	501	-
Stage 2	-	-	-	-	448	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	901	-	-	-	139	449
Mov Cap-2 Maneuver	-	-	-	-	278	-
Stage 1	-	-	-	-	497	-
Stage 2	-	-	-	-	448	-

Approach	EB	WB	SB
HCM Control Delay, s	0.1	0	17.6
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	901	-	-	-	301
HCM Lane V/C Ratio	0.007	-	-	-	0.054
HCM Control Delay (s)	9	-	-	-	17.6
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	2.1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	125	3	798	181	4	519
Future Vol, veh/h	125	3	798	181	4	519
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	132	3	840	191	4	546

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1394	840	0	0	1031	0
Stage 1	840	-	-	-	-	-
Stage 2	554	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	156	365	-	-	674	-
Stage 1	424	-	-	-	-	-
Stage 2	575	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	155	365	-	-	674	-
Mov Cap-2 Maneuver	291	-	-	-	-	-
Stage 1	424	-	-	-	-	-
Stage 2	572	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.9	0	0.1
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	291	365	674	-
HCM Lane V/C Ratio	-	-	0.452	0.009	0.006	-
HCM Control Delay (s)	-	-	27.2	14.9	10.4	-
HCM Lane LOS	-	-	D	B	B	-
HCM 95th %tile Q(veh)	-	-	2.2	0	0	-

Intersection	
Int Delay, s/veh	1

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	35	16	963	60	27	617
Future Vol, veh/h	35	16	963	60	27	617
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	115	-	155	205	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	19	1133	71	32	726

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	1923	1133	0	0	1204	0
Stage 1	1133	-	-	-	-	-
Stage 2	790	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	74	247	-	-	580	-
Stage 1	307	-	-	-	-	-
Stage 2	447	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	70	247	-	-	580	-
Mov Cap-2 Maneuver	193	-	-	-	-	-
Stage 1	307	-	-	-	-	-
Stage 2	422	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	26.2	0	0.5
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	NBR	WBLn1	WBLn2	SBL	SBT
Capacity (veh/h)	-	-	193	247	580	-
HCM Lane V/C Ratio	-	-	0.213	0.076	0.055	-
HCM Control Delay (s)	-	-	28.6	20.8	11.6	-
HCM Lane LOS	-	-	D	C	B	-
HCM 95th %tile Q(veh)	-	-	0.8	0.2	0.2	-

Intersection	
Int Delay, s/veh	24

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	144	177	347	979	586	94
Future Vol, veh/h	144	177	347	979	586	94
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	0	0	-	-	155
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	152	186	365	1031	617	99

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	2378	617	716	0	-	0
Stage 1	617	-	-	-	-	-
Stage 2	1761	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	~ 38	490	885	-	-	-
Stage 1	538	-	-	-	-	-
Stage 2	~ 151	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	~ 22	490	885	-	-	-
Mov Cap-2 Maneuver	~ 102	-	-	-	-	-
Stage 1	316	-	-	-	-	-
Stage 2	~ 151	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	161	3.1	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	EBLn2	SBT	SBR
Capacity (veh/h)	885	-	102	490	-	-
HCM Lane V/C Ratio	0.413	-	1.486	0.38	-	-
HCM Control Delay (s)	11.9	-	$ 338.2	16.8	-	-
HCM Lane LOS	B	-	F	C	-	-
HCM 95th %tile Q(veh)	2	-	11.2	1.8	-	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	35	4	1	87	172	26
Future Vol, veh/h	35	4	1	87	172	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	205	-	-	205
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	38	4	1	95	187	28

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	284	187	215	0	-	0
Stage 1	187	-	-	-	-	-
Stage 2	97	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	706	855	1355	-	-	-
Stage 1	845	-	-	-	-	-
Stage 2	927	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	705	855	1355	-	-	-
Mov Cap-2 Maneuver	705	-	-	-	-	-
Stage 1	844	-	-	-	-	-
Stage 2	927	-	-	-	-	-

Approach	EB		NB		SB	
HCM Control Delay, s	10.3		0.1		0	
HCM LOS	B					

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1355	-	718	-	-
HCM Lane V/C Ratio	0.001	-	0.059	-	-
HCM Control Delay (s)	7.7	-	10.3	-	-
HCM Lane LOS	A	-	B	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	4	0	87	167	9
Future Vol, veh/h	0	4	0	87	167	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	-	0	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	0	4	0	95	182	10

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	-	187	-	0	-	0
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.22	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.318	-	-	-	-
Pot Cap-1 Maneuver	0	855	0	-	-	-
Stage 1	0	-	0	-	-	-
Stage 2	0	-	0	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	-	855	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.2	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	-	855	-	-
HCM Lane V/C Ratio	-	0.005	-	-
HCM Control Delay (s)	-	9.2	-	-
HCM Lane LOS	-	A	-	-
HCM 95th %tile Q(veh)	-	0	-	-

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	46	11	17	42	86	84
Future Vol, veh/h	46	11	17	42	86	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	50	12	18	46	93	91

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	64	0	-	0	153	41
Stage 1	-	-	-	-	41	-
Stage 2	-	-	-	-	112	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1538	-	-	-	839	1030
Stage 1	-	-	-	-	981	-
Stage 2	-	-	-	-	913	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1538	-	-	-	811	1030
Mov Cap-2 Maneuver	-	-	-	-	811	-
Stage 1	-	-	-	-	949	-
Stage 2	-	-	-	-	913	-

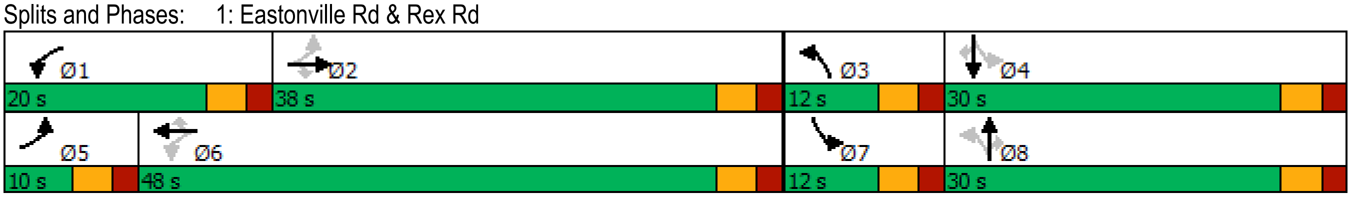
Approach	EB	WB	SB
HCM Control Delay, s	6	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1538	-	-	-	811	1030
HCM Lane V/C Ratio	0.033	-	-	-	0.115	0.089
HCM Control Delay (s)	7.4	0	-	-	10	8.8
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	0.3

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	77	205	73	280	203	24	78	247	447	28	165	48
Future Volume (vph)	77	205	73	280	203	24	78	247	447	28	165	48
Turn Type	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2		2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0	10.0	20.0	20.0
Total Split (s)	10.0	38.0	38.0	20.0	48.0	48.0	12.0	30.0	30.0	12.0	30.0	30.0
Total Split (%)	10.0%	38.0%	38.0%	20.0%	48.0%	48.0%	12.0%	30.0%	30.0%	12.0%	30.0%	30.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min	Min	None	Min	Min	None	None	None	None	None	None
Act Effct Green (s)	19.0	13.6	13.6	31.6	24.1	24.1	21.6	19.4	19.4	19.1	14.4	14.4
Actuated g/C Ratio	0.29	0.21	0.21	0.48	0.37	0.37	0.33	0.30	0.30	0.29	0.22	0.22
v/c Ratio	0.21	0.56	0.16	0.53	0.31	0.04	0.20	0.47	0.59	0.08	0.43	0.10
Control Delay	14.4	32.3	0.7	16.4	20.1	0.1	16.0	24.7	6.1	15.0	27.8	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.4	32.3	0.7	16.4	20.1	0.1	16.0	24.7	6.1	15.0	27.8	0.4
LOS	B	C	A	B	C	A	B	C	A	B	C	A
Approach Delay		21.9			17.1			13.0			20.9	
Approach LOS		C			B			B			C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 65.6	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay: 16.8	Intersection LOS: B
Intersection Capacity Utilization 60.1%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 1: Eastonville Rd & Rex Rd

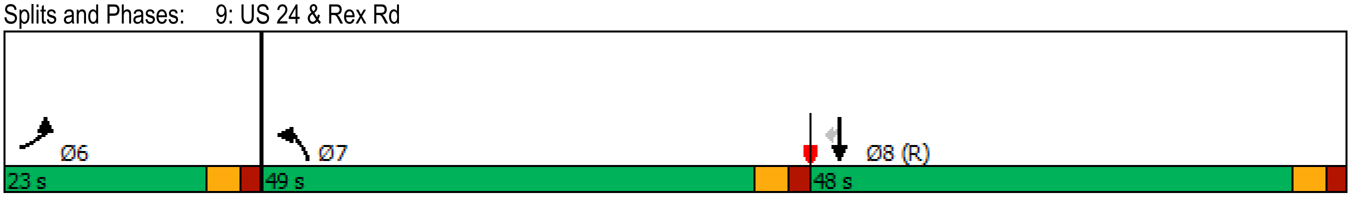


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	131	840	1200	529	471	142
Future Volume (vph)	131	840	1200	529	471	142
Turn Type	Prot	Free	Prot	NA	NA	Perm
Protected Phases	6!		7	Free!	8	
Permitted Phases		Free				8
Detector Phase	6		7		8	8
Switch Phase						
Minimum Initial (s)	5.0		5.0		5.0	5.0
Minimum Split (s)	20.0		10.0		20.0	20.0
Total Split (s)	23.0		49.0		48.0	48.0
Total Split (%)	19.2%		40.8%		40.0%	40.0%
Yellow Time (s)	3.0		3.0		3.0	3.0
All-Red Time (s)	2.0		2.0		2.0	2.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	5.0		5.0		5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	Max		None		C-Max	C-Max
Act Effct Green (s)	18.0	120.0	44.0	120.0	43.0	43.0
Actuated g/C Ratio	0.15	1.00	0.37	1.00	0.36	0.36
v/c Ratio	0.52	0.56	1.00	0.15	0.39	0.23
Control Delay	54.8	1.4	52.7	0.0	29.9	5.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	54.8	1.4	52.7	0.0	29.9	5.0
LOS	D	A	D	A	C	A
Approach Delay	8.6			37.0	24.1	
Approach LOS	A			D	C	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 50 (42%), Referenced to phase 8:SBT, Start of Green	
Natural Cycle: 70	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.00	
Intersection Signal Delay: 26.2	Intersection LOS: C
Intersection Capacity Utilization 66.2%	ICU Level of Service C
Analysis Period (min) 15	

! Phase conflict between lane groups.

Splits and Phases: 9: US 24 & Rex Rd



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	125	3	798	181	4	519
Future Volume (vph)	125	3	798	181	4	519
Turn Type	Prot	Perm	NA	Perm	Perm	NA
Protected Phases	8		2			6
Permitted Phases		8		2	6	
Detector Phase	8	8	2	2	6	6
Switch Phase						
Minimum Initial (s)	5.0	5.0	5.0	5.0	5.0	5.0
Minimum Split (s)	20.0	20.0	20.0	20.0	20.0	20.0
Total Split (s)	25.0	25.0	65.0	65.0	65.0	65.0
Total Split (%)	27.8%	27.8%	72.2%	72.2%	72.2%	72.2%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None	None	Max	Max	Max	Max
Act Effct Green (s)	11.3	11.3	60.1	60.1	60.1	60.1
Actuated g/C Ratio	0.14	0.14	0.74	0.74	0.74	0.74
v/c Ratio	0.54	0.01	0.61	0.16	0.01	0.40
Control Delay	40.8	20.0	8.0	1.0	3.8	5.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.8	20.0	8.0	1.0	3.8	5.4
LOS	D	B	A	A	A	A
Approach Delay	40.3		6.7			5.4
Approach LOS	D		A			A

Intersection Summary	
Cycle Length: 90	
Actuated Cycle Length: 81.4	
Natural Cycle: 60	
Control Type: Semi Act-Uncoord	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 8.9	Intersection LOS: A
Intersection Capacity Utilization 57.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 10: Eastonville Rd & Dawlish Dr

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	144	177	347	979	586	94
Future Volume (vph)	144	177	347	979	586	94
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm
Protected Phases	4		5	2	6	
Permitted Phases		4	2			6
Detector Phase	4	4	5	2	6	6
Switch Phase						
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	21.0	21.0	9.0	21.0	21.0	21.0
Total Split (s)	25.0	25.0	20.0	75.0	55.0	55.0
Total Split (%)	25.0%	25.0%	20.0%	75.0%	55.0%	55.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag			Lead		Lag	Lag
Lead-Lag Optimize?			Yes		Yes	Yes
Recall Mode	None	None	None	None	None	None
Act Effct Green (s)	12.0	12.0	51.2	51.2	30.4	30.4
Actuated g/C Ratio	0.16	0.16	0.70	0.70	0.41	0.41
v/c Ratio	0.53	0.45	0.70	0.80	0.80	0.14
Control Delay	37.9	9.2	20.3	13.8	27.5	4.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	37.9	9.2	20.3	13.8	27.5	4.8
LOS	D	A	C	B	C	A
Approach Delay	22.1			15.5	24.3	
Approach LOS	C			B	C	

Intersection Summary	
Cycle Length: 100	
Actuated Cycle Length: 73.6	
Natural Cycle: 70	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.80	
Intersection Signal Delay: 19.0	Intersection LOS: B
Intersection Capacity Utilization 70.5%	ICU Level of Service C
Analysis Period (min) 15	

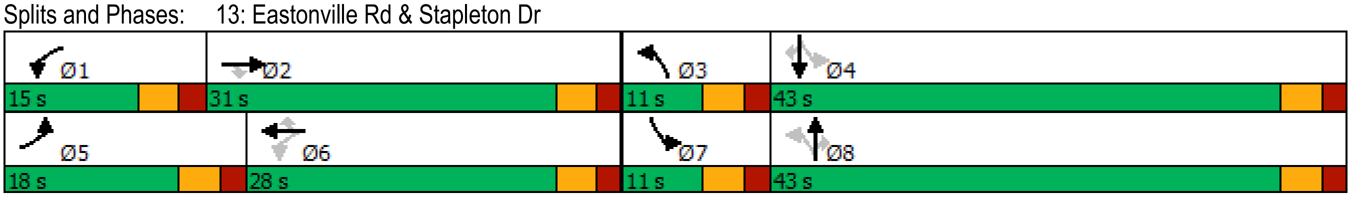
Splits and Phases: 12: Eastonville Rd & Londonderry Dr

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	406	553	160	194	718	294	251	626	179	155	363	245
Future Volume (vph)	406	553	160	194	718	294	251	626	179	155	363	245
Turn Type	Prot	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases			2	6		6	8		8	4		4
Detector Phase	5	2	2	1	6	6	3	8	8	7	4	4
Switch Phase												
Minimum Initial (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Minimum Split (s)	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
Total Split (s)	18.0	31.0	31.0	15.0	28.0	28.0	11.0	43.0	43.0	11.0	43.0	43.0
Total Split (%)	18.0%	31.0%	31.0%	15.0%	28.0%	28.0%	11.0%	43.0%	43.0%	11.0%	43.0%	43.0%
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	-2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	5.0	5.0	5.0	5.0	3.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Lead/Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	None	None	None	None	None	None	None	None	None	None	None
Act Effct Green (s)	13.0	25.8	25.8	32.2	24.5	22.5	42.8	36.8	36.8	42.8	36.8	36.8
Actuated g/C Ratio	0.13	0.26	0.26	0.33	0.25	0.23	0.44	0.37	0.37	0.44	0.37	0.37
v/c Ratio	0.94	0.63	0.31	0.67	0.86	0.60	0.73	0.95	0.27	0.89	0.55	0.34
Control Delay	73.4	35.8	6.4	32.5	46.6	17.7	31.7	54.5	5.7	63.0	27.8	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.4	35.8	6.4	32.5	46.6	17.7	31.7	54.5	5.7	63.0	27.8	4.1
LOS	E	D	A	C	D	B	C	D	A	E	C	A
Approach Delay		45.3			37.3			40.8			27.3	
Approach LOS		D			D			D			C	

Intersection Summary

Cycle Length: 100
Actuated Cycle Length: 98.3
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 38.5 Intersection LOS: D
Intersection Capacity Utilization 88.8% ICU Level of Service E
Analysis Period (min) 15

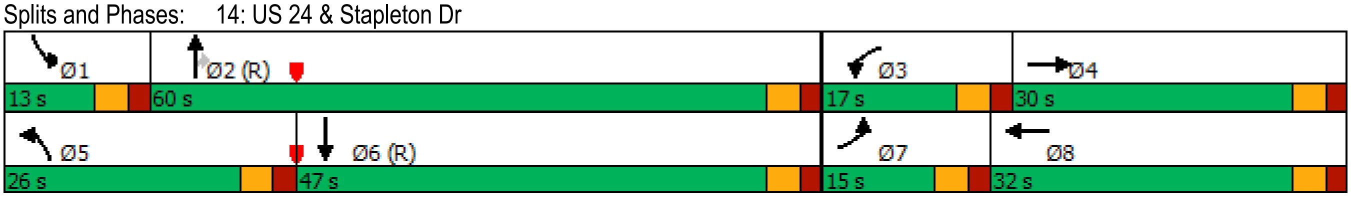
Splits and Phases: 13: Eastonville Rd & Stapleton Dr



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	372	358	375	125	514	329	640	1534	150	251	1079	377
Future Volume (vph)	372	358	375	125	514	329	640	1534	150	251	1079	377
Turn Type	Prot	NA	Free	Prot	NA	Free	Prot	NA	Perm	Prot	NA	Free
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases			Free			Free			2			Free
Detector Phase	7	4		3	8		5	2	2	1	6	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Minimum Split (s)	10.0	10.0		10.0	10.0		10.0	11.0	11.0	10.0	11.0	
Total Split (s)	15.0	30.0		17.0	32.0		26.0	60.0	60.0	13.0	47.0	
Total Split (%)	12.5%	25.0%		14.2%	26.7%		21.7%	50.0%	50.0%	10.8%	39.2%	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0	2.0	2.0	2.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	5.0	5.0		5.0	5.0		5.0	5.0	5.0	5.0	5.0	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	
Recall Mode	None	None		None	None		None	C-Max	C-Max	None	C-Max	
Act Effct Green (s)	10.0	23.6	120.0	9.8	23.4	120.0	24.6	55.0	55.0	11.6	42.0	120.0
Actuated g/C Ratio	0.08	0.20	1.00	0.08	0.20	1.00	0.20	0.46	0.46	0.10	0.35	1.00
v/c Ratio	1.37	0.54	0.25	0.47	0.78	0.22	0.96	1.00	0.20	0.80	0.89	0.25
Control Delay	228.6	46.3	0.4	57.9	54.3	0.3	73.2	54.0	7.0	74.6	38.5	0.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	228.6	46.3	0.4	57.9	54.3	0.3	73.2	54.0	7.0	74.6	38.5	0.4
LOS	F	D	A	E	D	A	E	D	A	E	D	A
Approach Delay		92.1			36.4			56.3			35.3	
Approach LOS		F			D			E			D	

Intersection Summary	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBT, Start of Green	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 1.37	
Intersection Signal Delay: 53.9	Intersection LOS: D
Intersection Capacity Utilization 91.1%	ICU Level of Service F
Analysis Period (min) 15	

Splits and Phases: 14: US 24 & Stapleton Dr



Intersection	
Intersection Delay, s/veh	16.9
Intersection LOS	C

Approach	EB	WB	NB	SB
Entry Lanes	1	1	1	1
Conflicting Circle Lanes	1	1	1	1
Adj Approach Flow, veh/h	374	534	813	254
Demand Flow Rate, veh/h	382	545	829	259
Vehicles Circulating, veh/h	508	432	333	603
Vehicles Exiting, veh/h	354	730	557	373
Ped Vol Crossing Leg, #/h	0	0	0	0
Ped Cap Adj	1.000	1.000	1.000	1.000
Approach Delay, s/veh	10.6	13.5	24.3	9.3
Approach LOS	B	B	C	A

Lane	Left	Left	Left	Left
Designated Moves	LTR	LTR	LTR	LTR
Assumed Moves	LTR	LTR	LTR	LTR
RT Channelized				
Lane Util	1.000	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976	4.976
Entry Flow, veh/h	382	545	829	259
Cap Entry Lane, veh/h	822	888	983	746
Entry HV Adj Factor	0.978	0.979	0.980	0.979
Flow Entry, veh/h	374	534	813	254
Cap Entry, veh/h	804	870	963	730
V/C Ratio	0.465	0.614	0.844	0.347
Control Delay, s/veh	10.6	13.5	24.3	9.3
LOS	B	B	C	A
95th %tile Queue, veh	2	4	10	2

Intersection	
Intersection Delay, s/veh	9.4
Intersection LOS	A

Approach	EB	WB	NB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	717	652	128
Demand Flow Rate, veh/h	731	665	131
Vehicles Circulating, veh/h	151	29	670
Vehicles Exiting, veh/h	543	772	212
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	11.1	7.9	7.4
Approach LOS	B	A	A

Lane	Left	Left	Left
Designated Moves	TR	LT	LR
Assumed Moves	TR	LT	LR
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	731	665	131
Cap Entry Lane, veh/h	1183	1340	697
Entry HV Adj Factor	0.981	0.980	0.977
Flow Entry, veh/h	717	652	128
Cap Entry, veh/h	1160	1313	681
V/C Ratio	0.618	0.496	0.188
Control Delay, s/veh	11.1	7.9	7.4
LOS	B	A	A
95th %tile Queue, veh	4	3	1

Intersection	
Intersection Delay, s/veh	11.0
Intersection LOS	B

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	2	2	2
Adj Approach Flow, veh/h	135	1031	550
Demand Flow Rate, veh/h	138	1052	561
Vehicles Circulating, veh/h	857	4	135
Vehicles Exiting, veh/h	199	692	860
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	7.7	13.4	7.4
Approach LOS	A	B	A

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.535	2.535	2.535
Critical Headway, s	4.328	4.328	4.328
Entry Flow, veh/h	138	1052	561
Cap Entry Lane, veh/h	685	1415	1266
Entry HV Adj Factor	0.978	0.980	0.981
Flow Entry, veh/h	135	1031	550
Cap Entry, veh/h	670	1387	1241
V/C Ratio	0.201	0.743	0.443
Control Delay, s/veh	7.7	13.4	7.4
LOS	A	B	A
95th %tile Queue, veh	1	7	2

Intersection	
Intersection Delay, s/veh	20.4
Intersection LOS	C

Approach	WB	NB	SB
Entry Lanes	1	1	1
Conflicting Circle Lanes	1	1	1
Adj Approach Flow, veh/h	60	1204	758
Demand Flow Rate, veh/h	61	1228	774
Vehicles Circulating, veh/h	1156	33	42
Vehicles Exiting, veh/h	105	783	1175
Ped Vol Crossing Leg, #/h	0	0	0
Ped Cap Adj	1.000	1.000	1.000
Approach Delay, s/veh	10.8	27.7	9.6
Approach LOS	B	D	A

Lane	Left	Left	Left
Designated Moves	LR	TR	LT
Assumed Moves	LR	TR	LT
RT Channelized			
Lane Util	1.000	1.000	1.000
Follow-Up Headway, s	2.609	2.609	2.609
Critical Headway, s	4.976	4.976	4.976
Entry Flow, veh/h	61	1228	774
Cap Entry Lane, veh/h	424	1334	1322
Entry HV Adj Factor	0.984	0.981	0.980
Flow Entry, veh/h	60	1204	758
Cap Entry, veh/h	417	1308	1295
V/C Ratio	0.144	0.920	0.585
Control Delay, s/veh	10.8	27.7	9.6
LOS	B	D	A
95th %tile Queue, veh	0	16	4

Intersection						
Intersection Delay, s/veh	12.8					
Intersection LOS	B					

Approach		EB		NB		SB
Entry Lanes		2		2		2
Conflicting Circle Lanes		2		2		2
Adj Approach Flow, veh/h		338		1396		716
Demand Flow Rate, veh/h		345		1424		730
Vehicles Circulating, veh/h		629		155		372
Vehicles Exiting, veh/h		473		819		1207
Ped Vol Crossing Leg, #/h		0		0		0
Ped Cap Adj		1.000		1.000		1.000
Approach Delay, s/veh		7.0		16.9		7.6
Approach LOS		A		C		A

Lane	Left	Right	Left	Right	Left	Right
Designated Moves	L	TR	L	TR	LT	TR
Assumed Moves	L	TR	L	TR	LT	TR
RT Channelized						
Lane Util	0.449	0.551	0.261	0.739	0.470	0.530
Follow-Up Headway, s	2.667	2.535	2.667	2.535	2.667	2.535
Critical Headway, s	4.645	4.328	4.645	4.328	4.645	4.328
Entry Flow, veh/h	155	190	372	1052	343	387
Cap Entry Lane, veh/h	757	832	1170	1245	959	1035
Entry HV Adj Factor	0.981	0.979	0.981	0.980	0.981	0.980
Flow Entry, veh/h	152	186	365	1031	336	379
Cap Entry, veh/h	742	814	1148	1220	940	1015
V/C Ratio	0.205	0.228	0.318	0.845	0.358	0.374
Control Delay, s/veh	7.1	6.9	6.2	20.7	7.7	7.5
LOS	A	A	A	C	A	A
95th %tile Queue, veh	1	1	1	11	2	2

Queuing Reports

TRANSPORTATION
CONSULTANTS, INC.

Intersection: 1: Eastonville Rd & Rex Rd

Movement	EB	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	T	R	L	T	R	L	T	R	L	T	R
Maximum Queue (ft)	56	138	97	252	97	34	98	101	105	55	170	43
Average Queue (ft)	13	65	41	121	34	6	40	37	45	17	78	18
95th Queue (ft)	40	116	78	206	76	23	77	76	86	47	137	36
Link Distance (ft)		719			500			879			1170	
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	205		155	350		155	315		155	205		155
Storage Blk Time (%)		0		0							0	
Queuing Penalty (veh)		0		0							0	

Intersection: 2: Ivybridge Blvd & Rex Rd

Movement	EB	WB	NB	NB
Directions Served	TR	L	L	R
Maximum Queue (ft)	4	48	53	80
Average Queue (ft)	0	14	19	40
95th Queue (ft)	3	40	46	66
Link Distance (ft)	500			316
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		155	205	
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 3: Rex Rd & Future Access

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	12	54
Average Queue (ft)	0	17
95th Queue (ft)	6	44
Link Distance (ft)		330
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	155	
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 133: Ivybridge Blvd & North Church Access

Movement	EB
Directions Served	LR
Maximum Queue (ft)	26
Average Queue (ft)	12
95th Queue (ft)	33
Link Distance (ft)	262
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 134: Ivybridge Blvd & South Church Access

Movement	EB
Directions Served	R
Maximum Queue (ft)	16
Average Queue (ft)	1
95th Queue (ft)	8
Link Distance (ft)	245
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 305: Dawlish Dr & Ivybridge Blvd

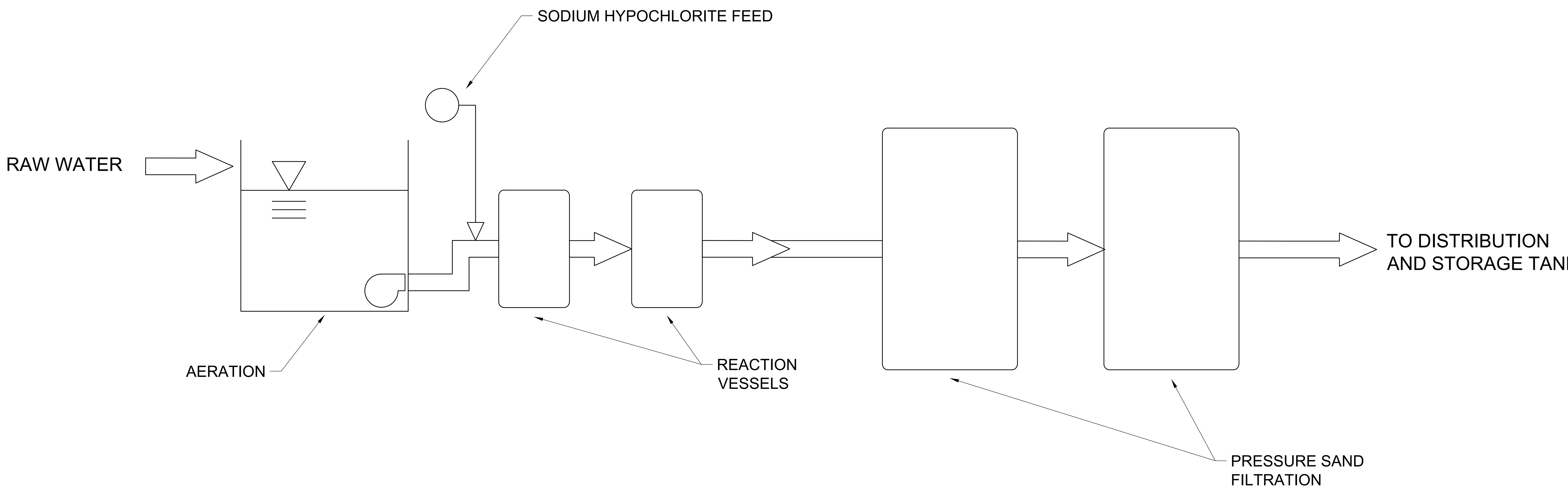
Movement	EB	WB	SB	SB
Directions Served	LT	TR	L	R
Maximum Queue (ft)	49	4	43	56
Average Queue (ft)	9	0	14	18
95th Queue (ft)	35	3	40	46
Link Distance (ft)	225	208	239	239
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Zone Summary

Zone wide Queuing Penalty: 1

EXHIBIT Y: WATER TREATMENT PLANT PROCESS FLOW DIAGRAM

FERNANDEZ, SARAH, 12/21/2021 1:14 PM



WATER TREATMENT PLANT PROCESS FLOW DIAGRAM

PRELIMINARY

NOT FOR CONSTRUCTION

NOT TO SCALE

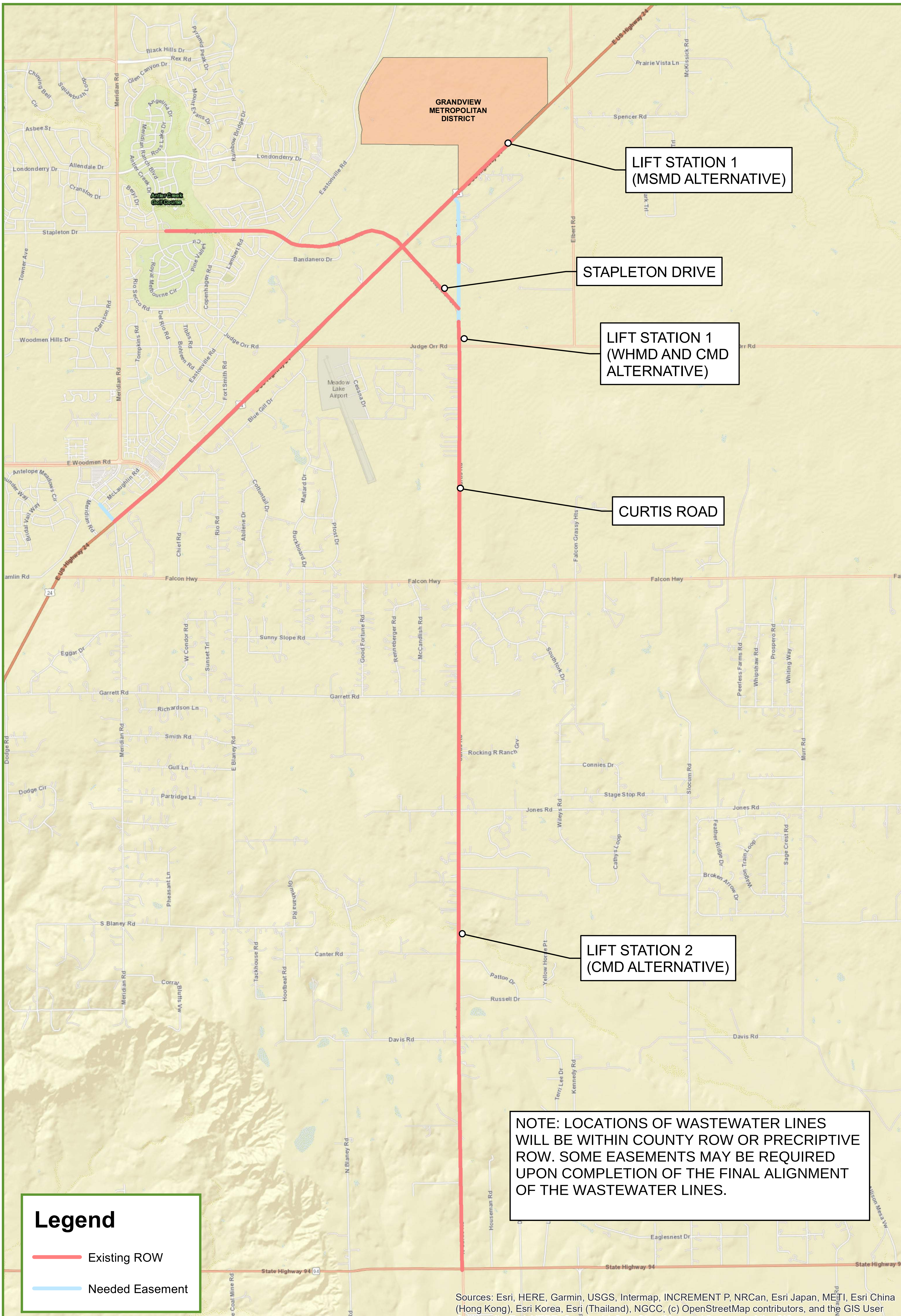
HRGreen

Job No.:	201662	WATER TREATMENT FLOW
Prepared By:	SJF	
Date:	12/20/21	

FIG.XX

HRGreen DRAWING PATH:J:\2020\201662.05\CAD\Dwgs\WATER TREATMENT FLOW.dwg

EXHIBIT Z: ROW – EASEMENT WASTEWATER ALIGNMENT



HRGreen

Grandview Metropolitan District
ROW and Easements Exhibit

El Paso County
Colorado

N
W E
S

0 2,000 4,000
Feet
1 inch = 4,000 feet

HRG PLOT: 1:59:14 PM 1/24/2024 BY: chloe.hamer FILE: \\hrgreen.com\HRG\Data\2020\201662.07\GIS\workingfile2.mxd

EXHIBIT AA: CMD IGA AND WHMD DRAFT AGREEMENT

IGA Between Cherokee Metropolitan District and Grandview Reserve Metropolitan District No. 1

CHEROKEE METROPOLITAN DISTRICT
AND GRANDVIEW RESERVE METROPOLITAN DISTRICT NO. 1
INTERGOVERNMENTAL AGREEMENT

This Intergovernmental Agreement ("Agreement") is made and entered into effective this 21st day of December 2021 ("Effective Date") by and between Cherokee Metropolitan District, a Colorado Title 32 Special District ("Cherokee") and Grandview Reserve Metropolitan District No. 1,________________________, a Colorado Title 32 Special District ("Grandview"). Cherokee and Grandview are referred to herein collectively as "Parties" and individually as a "Party".

RECITALS

A. The Parties are both quasi-municipal corporations and political subdivisions of the State of Colorado formed pursuant to Title 32, Colorado Revised Statutes.

B. The Parties supply or will supply a variety of municipal services to their residents and landowners within their respective boundaries and service areas, including water and wastewater services.

C. Cherokee owns and operates a wastewater collection and treatment system, including a wastewater pipeline ("Cherokee Wastewater Line") that conveys wastewater from its service area to a wastewater treatment plant ("Cherokee WWTP"), located at 19174 Drennan Road, Colorado Springs, CO 80928, with a capacity to treat 4.8 million gallons per day of wastewater. The Cherokee WWTP is rated for a total discharge of 4.8 million gallons per day ("MGD"), of which Cherokee has a right to 2.6 MGD of wastewater treatment capacity. The Cherokee WWTP and the related Cherokee-owned wastewater facilities are referred to herein as the "Cherokee Wastewater System".

D. Cherokee does not currently utilize its full 2.6 MGD of wastewater treatment capacity at the Cherokee WWTP. Cherokee has 0.5 MGD of wastewater treatment capacity at the Cherokee WWTP available for use by Grandview.

E. Cherokee operates a recharge facility ("Cherokee Recharge Facility") located at the northeast corner of Bar 10 Road and Henderson Lane in Ellicott, Colorado, at which treated effluent from the Cherokee WWTP is discharged into a series of rapid infiltration basins ("RIBs") for recharge of the alluvial aquifer.

F. Cherokee is currently prosecuting a replacement plan before the Ground Water Commission, which replacement plan seeks approval of new groundwater withdrawals based on the recharge of the alluvial aquifer at the Cherokee Recharge Facility.

G. Grandview desires to contract for wastewater treatment capacity in the Cherokee WWTP and the associated wastewater delivery infrastructure, as more specifically described herein, in the amount of one-half (0.5) million gallons per day (MGD).

H. Subject to the terms set forth below, Grandview will construct certain improvements in connection with the wastewater treatment capacity to be provided by Cherokee under this Agreement. Grandview must obtain the funds necessary to complete such improvements pursuant to a separate promissory note or other agreement between Grandview and a third party (the "Grandview Financing").

I. Cherokee is willing to provide wastewater treatment capacity in the Cherokee WWTP and the associated wastewater delivery infrastructure to Grandview subject to the terms and conditions set forth herein.

NOW, THEREFORE, for and in consideration of the foregoing recitals, which are incorporated herein, and the mutual benefits and obligations set forth herein, the Parties agree as follows:

1. **TERM OF AGREEMENT**. This Agreement shall become effective on and as of the date first written above and shall remain in effect until terminated in accordance with its terms.

2. **OWNERSHIP AND CONTROL OF CHEROKEE WWTP**. Cherokee will maintain a 100% ownership interest in and sole control of all Cherokee facilities, including without limitation the Cherokee Wastewater Line, the Cherokee WWTP, the Cherokee Recharge Facility, and the Cherokee Wastewater System. A map of Cherokee's current facilities and system is attached as **Exhibit A**. Service provided under this Agreement shall be subject to Cherokee's then-current rules, regulations, and standards, and then-current costs and fees, all as may be amended from time to time.

3. **CONNECTION AND TRANSMISSION**. Grandview shall design and construct a wastewater lift station, wastewater peak flow equalization system, wastewater emergency storage system, wastewater force main and all necessary

appurtenances (the "Grandview Delivery System") to connect Grandview's sanitary sewer system to the Cherokee Wastewater System at one of the potential locations shown on the attached Exhibit A as agreed upon by the Parties prior to the time of connection. The location at which Grandview's wastewater is delivered into the Cherokee Wastewater System is the "Connection Point". In the event the Parties do not agree, Cherokee will determine the Connection Point, in its sole discretion. Grandview, at its sole cost and expense, shall obtain Cherokee and all other necessary state and local government and agency approvals to make such connection. Grandview is the sole owner and operator of the Grandview Delivery System and shall be responsible for all aspects of the Grandview Delivery System, including without limitation design, construction, operation, maintenance, and replacement.

3.1 Grandview Connection to MSMD Facilities. The Parties acknowledge that Grandview may elect to connect the Grandview Delivery System to the wastewater facilities of Meridian Service Metropolitan District ("MSMD") at the MSMD Lift Station Possible Connection Point shown on Exhibit A ("Grandview-MSMD Connection"), and that such connection may allow Grandview to comply with several of the requirements of this Agreement, including without limitation peak flow equalization, wastewater emergency storage, and pretreatment. Prior to construction of the Grandview-MSMD Connection or any related facilities, Grandview shall, at its sole cost and expense provide Cherokee with design drawings of the proposed connection and any related facilities, as well as an engineering report explaining how the proposed connection will comply with the terms of this Agreement. If Grandview elects to pursue the Grandview-MSMD Connection, then Grandview shall design and construct the connection such that Grandview's wastewater is metered prior to the Grandview-MSMD Connection. Grandview, at its sole cost and expense, shall obtain Cherokee and all other necessary federal, state, local government, and agency approvals of the Grandview-MSMD Connection and any related facilities, including without limitation any upgrades or upsizing of the existing MSMD facilities. Cherokee's approval of the Grandview-MSMD Connection shall not be unreasonably withheld or delayed. Grandview's wastewater shall be subject to all terms and conditions in this Agreement regardless of whether it elects to construct the Grandview-MSMD Connection.

4. DELIVERY/TREATMENT/DISCHARGE/EQUALIZATION /EMERGENCY STORAGE.

4.1 Delivery. Grandview will deliver its wastewater to the Connection Point and the Grandview wastewater will then be conveyed via the Cherokee Wastewater Line to the Cherokee WWTP, as shown on the attached Exhibit A.

4.2 Pretreatment: Grandview shall, at its sole cost and expense, design and construct pretreatment facilities, including without limitation screening, grit removal, flow equalization and emergency storage, as further described below. All such pretreatment facilities shall be constructed at a location such that Grandview's wastewater is or can be subjected to such pretreatment prior to the delivery of said wastewater to the Connection Point. Grandview, at its sole cost and expense, shall obtain Cherokee and all other necessary federal, state, local government, and agency approvals of such pretreatment facilities. Grandview shall solely own and control such pretreatment facilities and shall be solely responsible for all aspects of the operation and maintenance of its pretreatment facilities, including without limitation screening, grit removal, flow equalization and emergency storage, as further described below.

4.2.1 Screening. Grandview shall, at its sole cost and expense, design, permit, and construct a facility that screens its wastewater through a 6 millimeter mechanical screen with redundancy.

4.2.2 Grit Removal. Grandview shall, at its sole cost and expense, design, permit, and construct a facility for grit removal that includes without limitation a concentrator, pump, washer/classifier, dewatering, and disposal for particles with a specific gravity greater than 2.65. This removal shall be 95% efficient for particles 75 microns and larger at average daily flow and 95% efficient for particles 106 microns and larger at peak hour flow.

4.2.3 Flow Equalization. Grandview shall equalize wastewater flow rates in order to reduce the wastewater flow peaking impacts at the Connection Point. Grandview shall install a wastewater flow equalization system so that Grandview wastewater flows into the Connection Point at any time do not exceed a range of 0.5 to 1.5 times Grandview's design average daily wastewater flow. Grandview shall size accordingly and install such wastewater peak flow equalization system and companion pumping facilities, as necessary, at its sole cost and expense. Grandview shall obtain Cherokee and all other necessary federal, state, local government, and agency approvals to make such installation of its wastewater peak flow equalization system and companion pumping facilities.

4.2.4 Emergency Storage. Grandview shall, at its sole cost and expense, design, permit, and construct a wastewater emergency storage system to meet all Cherokee, federal, state, local government, and agency specifications, rules and regulations. Grandview shall install such wastewater pumping facility and emergency storage system at its sole cost and expense, prior to any Grandview wastewater being delivered into the Cherokee Wastewater Line. Grandview shall, at its sole cost and expense, obtain Cherokee and all other necessary federal, state, local government, and agency approvals to make the installation of its wastewater emergency storage system.

4.2.5 Pretreatment Program. Grandview shall adopt, implement, and enforce a Pretreatment Program if required to do so by federal and/or state regulation. Grandview shall be solely responsible for compliance with all pretreatment requirements under federal and/or state regulation, including enforcement activities against users within Grandview's service area who violate requirements of the Pretreatment Program. In addition to Grandview's responsibility for such pretreatment compliance, Grandview hereby authorizes Cherokee to conduct enforcement activities as described in Cherokee Ordinance 83-0100, as amended from time to time, against users within Grandview's service area, with authority to disconnect users who violate requirements of the Pretreatment Program. Grandview shall submit an annual report documenting Pretreatment Program activities on an annual basis on forms provided by Cherokee to Cherokee by email to Cherokee's Pretreatment Coordinator and Cherokee's General Manager, and provided to Cherokee at the address given herein.

4.3 Treatment: Grandview wastewater will receive wastewater treatment at the Cherokee WWTP. Cherokee shall be responsible for compliance with the discharge permit for the Cherokee WWTP. Grandview is not a third-party beneficiary to Cherokee's discharge permit. Except in the event of Cherokee's failure to deliver the wastewater treatment contemplated herein or breach of this Agreement, violation of applicable law or negligence or willful misconduct, Cherokee shall have no liability to Grandview regarding any treated wastewater or the discharge thereof.

4.4 Discharge: Unless otherwise agreed pursuant to Section 8.3.7 herein, Grandview treated wastewater will be discharged from the Cherokee WWTP to the RIBs, as shown on Exhibit A, and allowed to infiltrate into the ground water table of the Upper Black Squirrel Creek Designated Groundwater Basin (the "UBS Basin").

4.5 Wastewater Delivery and Treatment Capacity. Subject to Grandview's compliance with all the terms and conditions of this Agreement, and so long as Grandview is not in default of this Agreement and this Agreement is not otherwise terminated, Cherokee will reserve wastewater delivery capacity from the Connection Point to the Cherokee WWTP and wastewater treatment capacity at the Cherokee WWTP for up to one-half million gallons per day (0.5 MGD) or 19.2% of the 2.6 MGD wastewater treatment capacity that Cherokee is currently entitled to use at the Cherokee WWTP ("Grandview Dedicated Capacity"). Such amount constitutes the maximum rate of dedicated wastewater treatment capacity that Cherokee is obligated to provide hereunder during any time period. Cherokee represents and warrants to

Grandview that, subject to the terms of this Agreement including without limitation the Parties acknowledgement of the Compliance Order on Consent described in Section 7.8 herein, to the best of Cherokee's knowledge and subject to satisfaction of Grandview's obligations herein, Cherokee is willing and able to provide the wastewater treatment capacity contemplated herein and that Cherokee's obligation to accept or treat Grandview's wastewater is not materially impacted by any currently existing injunction, order, or judgment of any court, state or federal agency action. Should Grandview elect to construct the Grandview-MSMD Connection, any such connection shall be pursuant to a separate agreement with MSMD and/or an amendment to this Agreement, and the dedication of the Grandview Dedicated Capacity described herein does not grant Grandview the right to connect to or use any MSMD structures or facilities.

4.5.1 Interruption. Cherokee shall not be liable to Grandview for failure to accept or treat Grandview's wastewater when such failure is the result of any injunction, order, or judgment of any court, state or federal agency action, or when such failure is the result of a strike, casualty, upset condition, mechanical or power failure, weather or flood condition, or other cause beyond Cherokee's reasonable control which arise after the Effective Date. Cherokee shall have the right to interrupt service and require Grandview to temporarily store and contain wastewater flows to the extent of Grandview's storage capabilities in the event of a malfunction of any wastewater delivery or treatment systems, including without limitation the Cherokee Wastewater Line, the Cherokee WWTP, and the RIBs. In the event of maintenance to any wastewater delivery or treatment systems which will prevent Cherokee from delivering Grandview's wastewater to the Cherokee WWTP, a 48-hour notice will be given to Grandview after which Grandview will temporarily store and contain wastewater to the extent of Grandview's storage capabilities. Nothing in this Section or Agreement shall be construed to limit, alter, or effect Cherokee's 100% ownership and operational control of any Cherokee facilities, including without limitation the Cherokee Wastewater Line, the Cherokee WWTP, the Cherokee Recharge Facility, and the Cherokee Wastewater System.

4.6 Chemical Treatment. Grandview understands and hereby acknowledges that it may be necessary to add chemical treatment to its wastewater prior to any Grandview wastewater being delivered into the Cherokee Wastewater Line in order to comply with this Agreement. Grandview shall obtain Cherokee and all other necessary federal, state, local government, and agency approvals of such chemical treatment prior to installation or modification of any chemical addition systems and/or pretreatment systems.

4.7 Meter Installation and SCADA System. Grandview shall purchase and install discharge meter systems approved by Cherokee that will provide totalized flows together with a corresponding continuous flow chart to measure all of Grandview's wastewater flows. If Grandview does not elect to construct the Grandview-MSMD Connection, then Grandview shall install the wastewater discharge meter system at the Connection Point. If Grandview does elect to construct the Grandview-MSMD Connection, then Grandview shall design and construct the connection such that Grandview's wastewater is metered prior to the Grandview-MSMD Connection. Grandview shall read the discharge meter(s), provide monthly reports of such metering and wastewater flows to Cherokee, and provide Cherokee access to digital readouts of the wastewater flow meters. Grandview shall be responsible, at its sole cost and expense, to install a Cherokee-approved supervisory control and data acquisition ("SCADA") system to allow Cherokee to view and read Grandview wastewater flow data at all times. Grandview shall, at its sole cost and expense purchase, install, maintain and replace the meter and SCADA system. Grandview shall obtain Cherokee and all other necessary federal, state, local government, and agency approvals for the installation of such meter and SCADA system.

5. Payment.

5.1 Capital Payments. Grandview shall pay Cherokee for the Grandview Dedicated Capacity in five (5) installments, each of which shall constitute twenty percent (20%) of the capital costs associated with the Grandview Dedicated Capacity as determined by Cherokee pursuant to sections 5.4 and 5.5 of this Agreement ("Capital Payments"). The amount of each Capital Payment is currently calculated as one million four hundred forty-four thousand four hundred forty-eight dollars and eighty cents ($1,444,448.80).

5.2 First Capital Payment. Grandview shall appropriate sufficient funds and provide the first Capital Payment to Cherokee upon the earlier of: (i) the date on which Grandview receives funds from the Grandview Financing; (ii) within 90 days of approval of Grandview's Site Plan by El Paso County, or (iii) December 31, 2023. A copy of all documents pertaining to the Grandview Financing shall be provided to Cherokee prior to the execution thereof. Upon Grandview's payment of the first Capital Payment, Cherokee shall issue a binding "Will Serve" letter to Grandview.

5.3 Subsequent Capital Payments. The four (4) Capital Payments due after the first Capital Payment shall be made on or before December 31 of each calendar year after the year in which the first Capital Payment is made, until such time as Grandview has paid Cherokee a total of seven million two hundred twenty-two thousand two hundred and forty-four dollars ($7,222,244.00) in total Capital Payments. The amount of such Capital Payments, including the total amount of all Capital Payments due to Cherokee, may be adjusted by Cherokee as provided herein.

5.4 Adjustment of Capital Payments Based on Metered Grandview Influent. The amount of the Capital Payments is based on the assumption that Grandview will experience an annual growth rate of less than 20% and will achieve buildout of the property in its service area in five (5) years or more. However, if Grandview experiences a higher growth rate than that assumed herein, Cherokee retains the sole discretion to adjust the Capital Payments in direct proportion to the metered amount of Grandview's wastewater (either at the Connection Point or prior to the Grandview-MSMD Connection, as provided in Section 4.7 herein) relative to its total allocated capacity of 0.5 MGD in the Cherokee WWTP. The intent of this Section is to provide for an increase in the Capital Payments only, and there shall be no reduction of any Capital Payments in the event of a slower-than-assumed growth rate.

5.5 Adjustment of Capital Payments Based on Costs. The Parties acknowledge that there will be additional capital costs, including capital costs in excess of and beyond the amount of the Capital Payments, that are necessarily incurred for the Cherokee Wastewater System and the provision of wastewater service hereunder. Those additional capital costs may be the in the form of additions, modifications, repairs or other necessary costs. Cherokee shall have the sole discretion to approve and expend such additional capital costs, to adjust the Capital Payments due hereunder, and/or to require additional Capital Payments, based on an increase or decrease in costs associated with the Cherokee Wastewater System that are reasonably related to the services provided to Grandview pursuant to this Agreement.

5.6 Operations, Maintenance, and Replacement Costs. Grandview shall pay Cherokee a monthly service fee ("Grandview Service Fee") based on its pro-rata share of all operation, maintenance, replacement, and associated costs for the Cherokee WWTP, the Cherokee Recharge Facility, including without limitation all costs and expenses associated with or incurred as a result of any order by federal, state, county, local government, or other regulatory agency to bring the Cherokee WWTP and/or the Cherokee Recharge Facility into compliance with applicable Rules and Regulations, as they exist today or as the same may be hereafter amended or enacted ("O&M Costs"). The Grandview Service Fee shall be allocated by Cherokee to Grandview in direct proportion to Grandview's metered influent flows transmitted to the Cherokee WWTP and the total amount of metered influent. The fees allocated to Grandview pursuant to this Agreement will also include any surcharges charged under Section 7.5 herein, where appropriate, and any Replacement Water Fees charged under Section 8.3.6, if applicable. The Grandview Service Fee shall be established by Cherokee and notice given to Grandview of the amount of the fee no later than October 1 of each year.

5.6.1 Billing and Payments. The Grandview Service Fee will be invoiced once a month and is due and payable within 30 days of receipt of invoice. Grandview shall budget and appropriate sufficient funds for payment of the Grandview Service Fee. Cherokee will provide Grandview with the monthly metered influent sewage flow data and the calculation of the Grandview Service Fee. If Grandview is over six (6) months in arrears for payment of the Grandview Service Fee, Cherokee may, but is not required to, invoice all Grandview customers directly for all current and future Grandview Service Fees, including any and all additional processing and collection fees and/or costs incurred by Cherokee for such direct billing. Grandview shall include in its service contracts with its customers a provision which provides for Cherokee's right to invoice Grandview customers directly, as set forth in the previous sentence.

5.7 Annual Audit. Cherokee shall perform an annual audit of all metered influent sewage flow data and shall invoice Grandview annually for any related annual adjustment of O&M Costs ("Annual Adjustment"). Upon request by Grandview, Cherokee will also provide reasonable documentation supporting the Annual Adjustment. Further, no more than once each calendar year, and at its own expense, Grandview may audit the operations, maintenance and capital improvement records of Cherokee for the purpose of verifying the Grandview Service Fee and Capital Payments and the allocation to Grandview. Grandview must provide at least 30-days advanced notice of its request to review Cherokee's records for such purpose. Cherokee shall cooperate in good faith to facilitate such audit, and the parties shall work in good faith to resolve any discrepancies or issues resulting therefrom. Nothing herein shall be interpreted to require Cherokee to disclose privileged, confidential, or sensitive information.

5.8 Interest/Service Charges. Any fee or charge due hereunder and not timely paid shall accrue interest at 8% annually.

6. PLANT EXPANSION.

6.1 Expansion. The Parties acknowledge and agree that statutes and regulations imposed and propounded by the applicable regulatory authorities as in existence or hereafter amended may require that Cherokee commence the planning for expansion of the Cherokee WWTP when the Cherokee WWTP reaches 80% of capacity and that construction must be underway when the facility reaches 95% of capacity. Cherokee, in its sole discretion, shall determine the need for any such expansion based, in part, on the need for future capacity of Cherokee, Meridian Service Metropolitan District ("MSMD"), Grandview, and any other entity receiving or projected to receive wastewater treatment at the Cherokee WWTP. Should Cherokee determine the need for any such expansion of the Cherokee WWTP, it shall provide notice of such determination to Grandview, and afford Grandview the opportunity to determine if Grandview will participate in the expansion. Nothing in this Agreement obligates Cherokee to expand the Cherokee WWTP, so long as Cherokee can provide the services required under this Agreement without such expansion. Ownership and control of any expansion shall be solely vested in Cherokee unless otherwise agreed.

6.2 Expansion Costs. Cherokee shall define the payment responsibilities for such expansion prior to initiation of same. If Grandview desires additional capacity (*i.e.* beyond 0.5 MGD) in an expanded Cherokee WWTP, it shall pay its adjusted pro-rata share of any capital costs associated with such expansion. If Grandview does not project the need for additional capacity beyond the initial 0.5 MGD allocation of capacity made herein, Grandview shall not be required to fund any expansion of the Cherokee WWTP. However, if modifications are undertaken during any expansion of the Cherokee WWTP that are the result of regulatory requirements and/or needed infrastructure replacement or capital improvements to the Cherokee WWTP, Grandview shall pay its pro-rata share of any capital costs associated with such modifications, regardless of whether Grandview elects to use any additional capacity over its 0.5 MGD allocation made herein. In connection with any future expansion and/or modification of the Cherokee WWTP, the estimated costs of the same shall be fully funded by Grandview prior to commencement of construction of the expansion.

6.3 Expansion Timeline. In the event Cherokee elects to proceed with an expansion and/or modification to the Cherokee WWTP, Cherokee shall provide notice to Grandview of its intent to proceed no later than 24 months prior to the proposed start-of-construction date. Cherokee will pursue the expansion and/or modification with reasonable diligence; however, nothing herein guarantees that the expansion will be completed on any specific timeline.

6.4 Growth Projections. Grandview shall give Cherokee reasonable notice of growth projections and capacity needs on an annual basis so that Cherokee can adequately plan and obtain the necessary governmental approvals. Grandview shall give Cherokee rolling five-year growth projections of capacity needs no later than March 15 of each year.

6.5 Additional Capacity. Grandview may request additional capacity (over 0.5 MGD) at any time, including prior to an expansion of the Cherokee WWTP, and Cherokee agrees to cooperate with Grandview to determine whether such excess capacity is available. Cherokee is under no obligation to provide any additional capacity to Grandview. The Parties shall amend this Agreement or enter into a new written agreement to set forth the terms on which Cherokee will provide excess capacity available to Grandview.

7. **Regulatory Compliance.**

7.1 Cherokee and Grandview Rules and Regulations. Grandview shall adopt discharge rules and regulations prohibiting certain classes of pollutants and controlling certain classes of discharges as stringent as, or more restrictive than those rules and regulations of Cherokee as they may be amended from time to time. Cherokee shall notify Grandview of a proposed amendment to Cherokee's rules, regulations, and standards regarding wastewater treatment no less than sixty (60) days prior to enactment. Grandview's discharge rules and regulations shall maintain these regulations to be in compliance with Cherokee's rules and regulations. If a dispute arises regarding Grandview's adoption of rules and regulations pursuant to this Agreement, Cherokee and Grandview shall work in good faith to resolve any such dispute. Grandview shall submit a copy of Grandview's rules and regulations annually to Cherokee by January 15 and shall submit a copy of any amendments to such rules and regulations within thirty (30) days following adoption. Such rules and regulations and amendments thereto shall be submitted by registered mail to Cherokee at the address contained herein.

7.2 Regulatory Controls. Grandview understands that the Cherokee WWTP, the Cherokee Wastewater System, the Cherokee Recharge Facility, the Cherokee water production and distribution system, and all related facilities are publicly owned treatment works and water systems, and Cherokee is required by law to control wastewaters introduced by all users into the system, and to comply with laws related to the provision of water service. Grandview also understands that Cherokee is subject to present and continuing federal, state, county, local government, and agency statutory and regulatory controls which may, subsequent to the date of this Agreement, be changed, amended, or added to, which controls, changes, amendments or additions are presently unforeseen by the parties hereto and which may result in additional costs for capital improvements, operations, maintenance, repair, inspection, and administration of its system. Such regulatory controls expressly include without limitation any permits or other administratively-implemented controls for the Cherokee Wastewater System, the Cherokee WWTP, the Cherokee Recharge System, the

Cherokee water production and distribution system, and any other facilities related to or described herein, notwithstanding any change to the underlying laws, rules, or regulations. Grandview acknowledges that Cherokee may incur added costs that may increase Grandview's capital and/or O&M Costs as a result of statutory, regulatory, or administrative requirements. Grandview agrees that it will comply with, and cause to be complied with by their users, all federal and state laws and regulations applicable to Cherokee, including without limitation the Clean Water Act of 1977. Cherokee, as the Party with 100% ownership and control of all facilities hereunder, shall retain sole discretion as to compliance with any regulatory controls, and sole discretion to adjust Grandview's Capital Payments and/or the Grandview Service Fee due hereunder to account for any increase in such costs related to regulatory controls and/or requirements.

7.3 Enforcement._Grandview shall meet and require its customers to meet the Cherokee wastewater standards, now current and as amended or updated in the future and including without limitation the standards in this Agreement. Grandview shall be responsible for all costs or penalties associated with its and its customers' failure to meet wastewater standards, and/or causing a violation of the discharge permit for the Cherokee WWTP, for the State of Colorado site approval(s), and/or permit(s) for the Grandview Delivery System.

7.4 Conventional Pollutants. Cherokee's obligation to provide wastewater treatment hereunder is limited to the acceptance for treatment of conventional pollutants. No Significant Industrial User (SIU), as defined in Cherokee's Ordinance 83-0100, as it may be amended from time to time, shall be permitted to connect to Grandview's wastewater system, and no industrial wastes or any other non-conventional pollutants shall be permitted to enter the system without the prior written consent of Cherokee. "Industrial user" and "Industrial wastes" shall be as defined in Cherokee Ordinance 83-0100 as it may be amended from time to time. "Conventional pollutants" shall include biochemical oxygen demand (BOD5), total suspended solids (TSS), fecal coliform, pH, oil and grease, and any additional pollutants that are designated as conventional pollutants under the Clean Water Act, including any amendments thereto, and rules and regulations promulgated by the Environmental Protection Agency and/or the Colorado Department of Public Health and Environment. Grandview shall, at its sole cost and expense, provide Cherokee twice per year (due on January 15, and July 15), an updated inventory of all non-residential users connected to Grandview's wastewater system. Such inventory shall include the user's name, address, business, activity performed and/or materials manufactured by said user, and average daily water usage for previous quarter. The inventory list shall be sent to Cherokee by email to Cherokee's Pretreatment Coordinator and Cherokee's General Manager and provided to Cherokee at the address given herein. Cherokee will provide Grandview with notice of any changes to the email addresses for purposes of the notice described in this Section.

7.5 Strength of Wastewater Standards. Grandview's wastewater shall not exceed the following standards:

7.5.1 Five-day Biochemical Oxygen Demand (BOD5) - 400 milligrams per liter (mg/l)

7.5.2 Total Suspended Solids (TSS) - 400 mg/l

7.5.3 Total Dissolved Solids (TDS) - 600 mg/l

7.5.4 Hydrogen Sulfide - Beginning at the time when Grandview's wastewater influent (as sampled prior to the Grandview-MSMD Connection and/or the Connection Point) reaches an instantaneous rate of one hundred thousand (100,000) gallons per day, Grandview must maintain an average hydrogen sulfide concentration below 1 mg/L as averaged from weekly grab samples in any month ("Hydrogen Sulfide Limit"). If hydrogen sulfide levels rise above the Hydrogen Sulfide Limit in any month, CMD will issue a written warning to Grandview. If hydrogen sulfide levels rise above the Hydrogen Sulfide Limit for two consecutive months, CMD will provide notice to Grandview, and Grandview will immediately undertake chemical treatment to comply with the Hydrogen Sulfide Limit. If Grandview does not comply with the Hydrogen Sulfide Limit as provided herein, Cherokee may assess Grandview a unit surcharge consistent with Section 7.7 herein.

7.5.5 Non-Conventional Pollutants – Except as pre-authorized by Cherokee, any amount of industrial waste or any other non-conventional wastes associated with industrial wastewater discharges that are inconsistent with Section 7.5 herein.

7.5.6 Additions or Modifications – Cherokee may add to or modify the standards described in this Section 7.5 and subsections as necessary, in its sole discretion, to satisfy all regulatory requirements imposed on the Cherokee WWTP and any other component of the Cherokee Wastewater System. In the event Cherokee determines that it is necessary to add to or modify a standard, Cherokee shall provide to Grandview no less than three (3) months written notice of the change.

7.6 Monitoring. Grandview shall test its wastewater a minimum of once a week prior to it entering the Cherokee sewer system at the Grandview-MSMD Connection and/or the Connection Point or any other point per the Cherokee wastewater standards and provide the test results to Cherokee. Such weekly testing shall include without limitation those specific wastewater constituents described in this Agreement. At all points of connection to the Cherokee Wastewater System, Grandview shall install a manhole with a sample port with a composite sampler such that the water quality of Grandview's wastewater can be monitored by Cherokee to ensure that all required standards are being satisfied.

7.7 Surcharges. If Grandview's wastewater exceeds the standards set forth in Section 7.5 above and subject to compliance with Section 7.5.4 (if applicable), the Grandview Service Fee shall be increased to include an extra-strength surcharge(s). In such case, Cherokee shall calculate, in its sole discretion, the extra-strength surcharge(s) to reflect operational costs reasonably related to the exceedance of the values described above. Cherokee may adjust these surcharges from time to time to account for any changes in regulatory requirements.

7.8 Compliance Order on Consent; TDS Reduction Project. Grandview specifically acknowledges that the Colorado Department of Public Health and Environment, Water Quality Control Division (the "Division"), issued the Cherokee WWTP a Compliance Advisory - Notice Of Significant Noncompliance, CDPS Number COX-048348, dated March 25, 2011. The State of Colorado issued a Compliance Order on Consent, Number: MC-140514-1, on June 23, 2014, ("Compliance Order on Consent") to resolve all violations cited by the Division and to establish compliance requirements and criteria for the continued operation of the Cherokee WWTP. This Agreement is subject to all terms and conditions of the Compliance Order on Consent. Grandview also acknowledges that in order to achieve compliance with the Compliance Order on Consent, Cherokee has undertaken the TDS Reduction Project, which includes the conversion of the Cherokee WWTP to membrane bioreactor wastewater treatment and the addition of reverse osmosis treatment, as well as related upgrades. Grandview acknowledges and agrees that its responsibility to pay capital costs associated with the Cherokee WWTP includes the TDS Reduction Project and the related upgrades.

8. RETURN FLOWS AND REPLACEMENT WATER.

8.1 No Representations or Warranties. Cherokee makes no representations or warranties regarding the availability of return flow water from the treated wastewater or the availability of treated wastewater that is released from the Cherokee WWTP. This Agreement is based on the condition that no return flow water from the Cherokee WWTP may or will be available for re-use through the Replacement Plan (defined below), or any amended Replacement Plan, or new replacement plan and that no treated wastewater from the Cherokee WWTP may or will be available to be diverted, to be taken dominion and control of, or to be used for any other purpose.

8.2 Potential for Availability of Return Water. Treated wastewater from the Cherokee WWTP is currently released to the RIBs located at the Cherokee Recharge Facility. Without making any representations or warranties, Cherokee anticipates that a portion of the released treated wastewater will be able to be re-used as ground water through a yet to be approved, pending Replacement Plan, or an amended Replacement Plan, or a new replacement plan.

8.3 Replacement Plan.

8.3.1 Background. In 2008, pursuant to the June 26, 2003 Chico Basin Wastewater Treatment Facility and Black Squirrel Basin Recharge Facility Intergovernmental Agreement between Cherokee and MSMD, as amended ("Cherokee-Meridian IGA"), Cherokee and MSMD jointly applied for a replacement plan with the Colorado Ground Water Commission (the "Commission") to obtain the ability to withdraw additional ground water from the Upper Black Squirrel Creek Designated Ground Water Basin based on the recharge of return flows from the Cherokee WWTP at the Cherokee Recharge Facility (the "Return Flows"), under Case No. 08GW71 (the "Replacement Plan"). The Replacement Plan was the subject of litigation between the Upper Black Squirrel Creek Ground Water Management District ("UBS"), Cherokee and MSMD under both Case No. 08GW71 and Water Court Case No. 98CW80 ("Water Case"). All filings in each case are publicly available. Cherokee and MSMD are currently in the process of updating and amending the Replacement Plan.

8.3.2 Replacement Water. "Replacement Water" is that amount of additional water that the Parties and MSMD are allowed to divert from the Upper Black Squirrel Creek Designated Ground Water Basin as a result of the Replacement Plan. Specifically, this Replacement Water shall include water derived from any new diversion points as well as water derived from existing Cherokee diversion points which result in an increase of productivity over and above the historic amounts produced or authorized for diversion, whichever is greater, from said existing Cherokee diversion points.

8.3.3 Incorporation of Grandview's Water Rights. If Grandview provides written notice to Cherokee of its election to participate in the Replacement Plan and pays its allocable costs as set forth in this Section 8, then, subject to all rules and regulations, Cherokee and Grandview shall cooperate as necessary to incorporate Grandview's water rights and the return flows therefrom ("Grandview Return Flows") into the Replacement Plan, and Grandview may be able to receive a portion of the Replacement Water derived from its treated wastewater ("Grandview Replacement Water"). Notwithstanding the foregoing, Cherokee shall continue to have the sole authority to prosecute the Replacement Plan, including without limitation the right to claim Grandview Return Flows as a source of Replacement Water. If the Replacement Plan utilizing, in part, Grandview's water rights and the Grandview Return Flows is approved ("Approved Plan") and subject to the terms of this Agreement, Grandview shall be entitled to claim an ownership interest in the Grandview Return Flows and/or Grandview Replacement Water (if any); however, the precise amount, rate, and conditions of use of this water is unknown as of the date of this Agreement. The Parties agree to enter into an agreement(s) to establish Grandview's ownership interest of the Grandview Replacement Water and any terms and conditions associated with the operation and use of that water under the Approved Plan after final approval of that plan by the Colorado Ground Water Commission. Cherokee shall have the right to use all of the Grandview Replacement Water until such time as the Parties have reached such agreement establishing Grandview's ownership interest of the Grandview Replacement Water and any terms and conditions associated with the operation and use of that water under the Approved Plan, and Grandview has constructed the facilities necessary to receive delivery of the Grandview Replacement Water.

8.3.4 200 Acre-Foot Commitment; Allocation of Grandview Replacement Water. Pursuant to the Cherokee-Meridian IGA and as further hereby agreed upon by the Parties, Cherokee is entitled to receive the first 200 acre-feet of the Return Flows on an annual basis (the "200 Acre-Foot Commitment"). After the 200 Acre-Foot Commitment is fulfilled, Grandview agrees to share the remaining portion of the Grandview Replacement Water from its treated wastewater with Cherokee at a proportion of 80% of the Grandview Return Flows for Grandview and 20% of the Grandview Return Flows for Cherokee.

8.3.5 Payment of Costs. If Grandview elects to join the Replacement Plan, Grandview shall pay Cherokee its pro-rata share of the cost to prepare, litigate, and process the Replacement Plan and the cost of any facilities and/or infrastructure required to be constructed to implement and operate the Approved Plan, based on Grandview's percentage share of Cherokee's capacity in the Cherokee WWTP, which percentage is nineteen and twenty-three hundredths (19.23%) (0.5 MGD/2.6 MGD = 19.23%). Grandview shall not be entitled to any Replacement Water until such time as such payment has been made to Cherokee.

8.3.6 Replacement Water Service Fee. If Grandview elects to join the Replacement Plan and if the Replacement Plan is approved, in addition to the payment described in Section 8.3.5 above, then the Grandview Service Fee shall be adjusted to include a monthly Replacement Water Service Fee equal to Grandview's pro-rata costs based on the proportion of the total amount of Replacement Water delivered to Grandview, of Cherokee's actual costs and expenses to produce, treat, store, and deliver the Grandview Replacement Water to the Cherokee water tank at Tamlin Road and Marksheffel Road (the "Cherokee Water Tank") including, but not limited to, costs of operation, maintenance, repairs and replacement to provide such delivery, treatment and storage of Grandview Replacement Water, and any related costs and expenses. Grandview, at its sole cost and expense, will be responsible for conveyance of the Grandview Replacement Water from the Cherokee Water Tank to wherever it desires to deliver the Grandview Replacement Water, including any and all costs to connect to the Cherokee Water Tank, pump system, water lines and all necessary approvals and permits from federal, state and local governments and all applicable agencies, including Cherokee. The Parties may mutually agree upon a delivery location other than the Cherokee Water Tank for delivery of the Grandview Replacement Water, and in such instance the alternative location shall supplant all references to the Cherokee Water Tank in this Section 8. The Replacement Water Service Fee shall be established and adjusted annually on January 31 by Cherokee, in its sole discretion. Billings for conveying the Grandview Replacement Water will be submitted monthly based upon the metered volume of water conveyed. Billings for this activity carry the same payment provisions as that of the monthly O&M Costs described herein.

8.3.7 Control of Wastewater and Replacement Water. Subject to all terms and conditions herein, as well as any other required Cherokee and federal, state, local government, and other agency approvals, Grandview may elect to divert and take dominion and control of and all responsibility for the Grandview Return Flows at the Cherokee WWTP prior to it entering the Cherokee Recharge Facility, or other wastewater discharge point, and the UBS Basin. All costs and expenses of such treated wastewater diversion shall be borne by Grandview, and Grandview shall obtain all other necessary federal, state, local government, and agency approvals and permits to make such diversion. Until such time as Grandview is allowed to and elects to take its treated wastewater, Grandview hereby grants Cherokee the right to control and use the Grandview wastewater and Grandview Return Flows ("License"), which License is terminable at any time, upon written notice to Cherokee. Until such time as Grandview elects to take the Grandview Return Flows under this Section 8.3.7, the Parties agree to cooperate in the processing of the Replacement Plan, and any amended or new Replacement Plan.

8.3.8 Replacement Water Availability and Use. The Parties acknowledge that there are various known and unknown factors that may affect the amount of Replacement Water that becomes available pursuant to the Approved Plan, including without limitation wastewater treatment losses at the Cherokee WWTP, evaporative losses, delivery losses, the physical ability to divert Replacement Water, and the like. It is also anticipated that, in any approved replacement plan, a portion of the available treated wastewater may be required to be left in the UBS Basin groundwater aquifer and not be allowed to be recovered as Return Flows. The amount of any Replacement Water available will be subject to the future restrictions at the Cherokee WWTP, the Cherokee-Meridian IGA as well as any terms and conditions of the Approved Plan. Grandview acknowledges that these various factors can and will result in less Grandview Replacement Water than influent from Grandview's wastewater. At no time shall Cherokee be required to reduce its water withdrawals below those to which it has been historically entitled to under its water rights. Except as provided above, nothing in this Agreement obligates Cherokee to provide any Return Flows and/or Replacement Water to Grandview.

9. Additional Provisions.

9.1 Existing and Future IGAs. Grandview acknowledges that Cherokee has entered into the Cherokee-Meridian IGA, as amended and which may be further amended from time to time without notice or approval by Grandview. Grandview further acknowledges that MSMD has and likely will in the future enter into agreements with other third-parties for use of capacity at the Cherokee WWTP. Grandview is not a third-party beneficiary to any aforesaid agreements.

9.2 Service to Grandview Service Area. Grandview has issued a will-serve letter for the benefit of certain property identified as the Waterbury parcel and may serve that property in addition to all of the area identified as its service area in its approved Service Plan. Grandview may not provide wastewater service to properties other than the Waterbury property and those within its service area without the prior written consent of Cherokee, which consent shall not be unreasonably withheld so long as Grandview remains in compliance with this Agreement. Nothing herein shall be construed to limit or affect Cherokee's discretion to amend this Agreement.

9.3 Service Area Changes. Any significant changes in service area and/or political boundary limits, additions, expansions or deletions of Grandview's wastewater collection system service area, defined as the property currently or to be included within the Grandview Reserve Metropolitan District Nos. 1-4, shall be reported to Cherokee. Grandview must maintain current maps of its wastewater collection system and provide a copy of the documents by registered mail to Cherokee on an annual basis to the address contained herein.

9.4 Grandview System. Cherokee does not own, control, or operate Grandview's water and sanitary sewer system above the Connection Point. However, Grandview shall provide access to any and all such facilities reasonably related to the quality and quantity of wastewater influent. Cherokee shall provide at least 24 hours notice of its intent to access such facilities; however, Cherokee need not provide notice in the event of an emergency, as determined in Cherokee's sole discretion. Further, Grandview shall notify Cherokee within 24 hours of any failure of Grandview's sanitary sewer system that could affect the quality of wastewater influent at the Grandview-MSMD Connection and/or the Connection Point. Cherokee shall have access to Grandview's operations, maintenance, or billing records, as necessary to ensure compliance with the terms of this Agreement. Except as part of Grandview's obligations to pay Cherokee hereunder, which obligations rely upon Grandview's revenue sources, Cherokee shall have no right or claim to any service charges, fees or revenues imposed and collected by Grandview.

10. TERMINATION, DEFAULT, AND REMEDIES.

10.1 Termination After Capital Payments. Except as otherwise expressly set forth herein, after Grandview has made a Capital Payment to Cherokee as required herein, the Parties agree that no default or breach of this Agreement shall justify or permit termination of the continuing obligations of this Agreement as applicable to the proportionate amount of Capital Payments made by Grandview at that time and the proportionate wastewater service capacity therefor; provided, however, that this Section 10.1 does not prohibit termination or suspension of service to a customer as permitted by the Cherokee Rules and Regulations, as they may be revised or amended from time to time. Notwithstanding the foregoing, this Agreement may be terminated for default as provided herein, as applicable to the proportionate wastewater treatment capacity for which Capital Payments have not been timely made as required herein.

10.2 Default. The occurrence of any of the following events not cured within thirty (30) days of receipt of written notice from the non-defaulting Party by the defaulting Party constitutes a default under this Agreement:

10.2.1 failure to pay any fee, charge or other sum when due; or

10.2.2 failure to perform any other term, condition, covenant, representation or warranty; or

10.2.3 The appointment of a receiver, general assignment for the benefit of creditors, or any declaration of filing under any insolvency or bankruptcy act.

10.3 Remedies.

10.3.1 Upon default, the non-defaulting Party may elect to terminate this Agreement by written notice of termination to the defaulting Party, subject to the provisions of Section 10.1, and seek appropriate relief, including without limitation specific performance and/or damages, as may be available under the laws of the State of Colorado. Cherokee may also refuse to allow the addition of any new wastewater taps or connections beyond those being served on the date of default.

10.3.2 In addition to any other remedy provided herein or at law, Grandview shall be solely responsible for, and liable to Cherokee for all costs associated with any damages, fines or additional clean up due to or resulting from the wastewater quality, flows or overflows from Grandview that do not satisfy the terms of this Agreement.

11. MISCELLANEOUS PROVISIONS.

11.1 Warranties and Representations. In addition to the other warranties, covenants and representations, the Parties make the following warranties, representations, and covenants to each other:

11.1.1 Each Party has full right, power, and authority to enter into, perform and observe this Agreement.

11.1.2 Neither the execution of this Agreement, the consummation of the transactions contemplated hereunder, nor the compliance with the terms and conditions of this Agreement by either Party will conflict with or result in a breach of any terms, conditions, or provisions of, or constitute a default under any agreement, instrument, indenture, order or decree to which either Party is a party or by which either Party is bound.

11.1.3 This Agreement is a valid and binding obligation of each of the Parties and is enforceable in accordance with its terms.

11.1.4 The Parties shall keep and perform all of the covenants and agreements contained herein and, except in the event of an uncured default, shall not take any action which could have the effect of rendering this Agreement unenforceable in any manner.

11.1.5 The facilities, systems and Replacement Plan shall not be utilized in any manner which would jeopardize the tax exempt status of any bonds or debt issued by either of the Parties.

11.1.6 Each of the Parties is a duly constituted and validly existing political subdivision of the State of Colorado.

11.1.7 Each Party has, or reasonably believes, it can obtain adequate financial resources to fulfill the obligations of this Agreement.

11.2 Liability of Parties. No provision, covenant or agreement contained in this Agreement, nor any obligations herein imposed upon each Party, nor the breach thereof, shall constitute or create an indebtedness of the other Party within the meaning of any Colorado constitutional provision or statutory limitation. Neither Party shall have any obligation whatsoever to repay any debt or liability of the other Party.

11.3 Indemnification. Subject to the provisions of the Colorado Governmental Immunity Act, and without waiving the same, to the extent permitted by law, each Party agrees to indemnify, protect and hold harmless the other Party from any claims or damages to persons or property resulting from the actions or inactions of the indemnifying Party. Said indemnification shall include, but not be limited to, court costs, damages, and attorneys fees.

11.4 Modification. This Agreement may be modified, amended, changed or terminated, except as otherwise provided herein, in whole or in part, only by an agreement in writing duly authorized and executed by both Parties. No consent of any third party shall be required for the negotiation and execution of any such agreement.

11.5 Waiver. No failure by either Party to insist upon the strict performance of any agreement, term, covenant, or condition hereof or to exercise any right or remedy consequent upon default, and no acceptance of full or partial performance during the continuance of any such default, shall constitute a waiver of any such default of such agreement, term, covenant, or condition. No agreement, term, covenant or condition hereof to be performed or complied with by either Party, and no default thereof, shall be waived, altered, or modified except by a written instrument executed by the non-defaulting Party. The waiver of any breach or default of any of the provisions of this Agreement by either Party shall not constitute a continuing waiver or a waiver of any subsequent breach by the other Party of the same or another provision of this Agreement.

11.6 Integration. This Agreement contains the entire agreement between the Parties and no statement, promise or inducement made by either Party or the agent of either Party that is not contained in this Agreement shall be valid or binding. Each Party agrees that it has not relied upon any prior negotiations, representations, warranties, or understandings, whether oral or written.

11.7 Effect of Invalidity. If any provision of this Agreement is deemed invalid or unenforceable by a court of competent jurisdiction as to either Party, or as to both Parties, such invalidity or unenforceability shall not cause the entire Agreement to be terminated, so long as the primary purposes of this Agreement remain viable.

11.8 Access to Records. Each party shall have the right to inspect the books and records of the other party relating to this Agreement at reasonable times upon reasonable notice.

11.9 Governing Law. This Agreement shall be governed and construed in accordance with the laws of the State of Colorado.

11.10 Venue. The Parties agree and stipulate the proper venue for any court action that might occur in connection with or as a result of this Agreement is the District Court in and for the County of El Paso, Colorado.

11.11 Headings for Convenience Only. The headings, captions and titles contained herein are intended for convenience and reference only and are not intended to define, limit or describe the scope or intent of any of the provisions of this Agreement.

11.12 Notices. Any notices or other communications required or permitted by this Agreement or by law to be served on, given to or delivered to either Party, by the other Party, shall be in writing and shall be deemed received on the date personally delivered to the Party to whom it is addressed, on the date received via email with confirmation of receipt, or, upon receipt in the United States mail, by certified mail, return receipt requested, addressed to the following:

To Cherokee: General Manager
Cherokee Metropolitan District
6250 Palmer Park Blvd.
Colorado Springs, CO 80915

With copy to: Pete Johnson
Vranesh & Raisch, LLP
5303 Spine Road, Suite 202
Boulder, CO 80301

To Grandview:
Russ Dykstra

Spencer Fane, LLP

1700 Lincoln St. Suite 2000

Denver, CO 80203

Either Party may change its address for the purpose of this Section by giving written notice of such change to the other Party in the manner provided in this Section.

11.13 Government Authority. The Parties shall comply with any and all valid state, federal or local laws or regulations covering the subject of this Agreement, and any and all valid orders, regulations or licenses issued pursuant to any federal, state or local law or regulation governing the subject of this Agreement. Grandview shall comply with all terms and conditions of the Cherokee-Meridian IGA and the terms and conditions of the Cherokee Rules and Regulations applicable to sanitary sewer service.

11.14 Force Majeure. Either Party shall be excused from performing its obligations under this Agreement during the time and to the extent that it is prevented from performing by a cause beyond its control, including, but not limited to: any incidence of fire, flood, or strike; acts of God; acts of the Government; war or civil disorder; violence or the threat thereof; severe weather; commandeering of material, products, plants, or facilities by the federal, state, or local government; national fuel shortage; when satisfactory evidence of such cause is presented to the other Party, and provided further that such nonperformance is beyond the reasonable control of, and is not due to the fault or negligence of the Party not performing.

11.15 Perpetuity. Insofar at this Agreement affects water and water rights it is the intention of the parties that it be perpetual in nature according to the Colorado Supreme Court's decision in Cherokee v. City of Colorado Springs. Therefore, the parties forever waive any and all arguments in defense to the effect that this Agreement violates the Rule Against Perpetuities.

11.16 Authority to Execute Agreement. The individuals signing this Agreement expressly affirm and represent that they have the authority to enter this Agreement and to bind the Party they represent.

11.17 Fair Dealing. In all cases where the consent or approval of one Party is required before the other may act, or where the agreement or cooperation of either or both Parties is separately or mutually required as a legal or practical matter, then in that event the Parties agree that each will act in a fair and reasonable manner with a view to carrying out the intents and goals of this Agreement as the same are set forth herein, subject to the terms hereof. Grandview will not be bound by or subject to any rules or regulations of the Cherokee that are not also applicable and enforced in the same manner against similarly situated properties and users of Services within Cherokee boundaries, except as otherwise specifically set forth herein or in Cherokee's Rules and Regulations. All references in this Agreement to Cherokee's standards, policies, rules or regulations, or similar references, shall mean the same as adopted and applied by Cherokee within its boundaries, but as the same may be amended from time to time.

11.18 Recording. This Agreement or a summary thereof, with the consent of all parties, may be recorded in the real property records of El Paso County with an attachment thereto setting forth the legal descriptions and containing a Map of Facilities.

11.19 Enterprise. Each Party may establish and operate pursuant to an enterprise as provided by Article X, Section 20 of the Colorado Constitution. Any rights or responsibilities under this Agreement may be assigned to said enterprise provided that such assignment shall not relieve the Parties of their responsibilities hereunder.

IN WITNESS WHEREOF, the Parties hereto have executed this Agreement as of the day and year first above written.

[remainder of page left blank intentionally, signature page follows]

CHEROKEE METROPOLITAN DISTRICT

By: [signature]
Name: Steve Hasbrouck
Title: President
December 21, 2021

ATTEST:

By: [signature]
Name: Dennis Daniels
Title: Secretary
December 21, 2021

GRANDVIEW RANCH METROPOLITAN DISTRICT NO. 1

By: [signature]
Name: PAUL J. HOWARD
Title: PRESIDENT

ATTEST:

By: Samuel D Howard
Name: Samuel Howard
Title: Treasurer

Exhibit A – Map of Facilities

Agreement for Wastewater Treatment Plant Expansion and Extraterritorial Wastewater Service

AGREEMENT FOR WASTEWATER TREATMENT PLANT EXPANSION AND EXTRATERRITORIAL WASTEWATER SERVICE

THIS AGREEMENT FOR WASTEWATER TREATMENT PLANT EXPANSION AND EXTRATERRITORIAL WASTEWATER SERVICE (this "Agreement") is made and entered into effective as of ______________________, 2022 (the "Effective Date"), by and between WOODMEN HILLS METROPOLITAN DISTRICT, a quasi-municipal corporation and political subdivision of the state of Colorado, acting by and through its Wastewater Enterprise ("Woodmen"), and MELODY HOMES, INC., a Delaware corporation, D/B/A DR HORTON, its successors and assigns ("Horton"). Woodmen and Horton are sometimes referred to in this Agreement individually as a "Party" and jointly as the "Parties".

RECITALS

A. Woodmen is a quasi-municipal corporation and political subdivision of the state of Colorado formed pursuant to Title 32 of the Colorado Revised Statutes. Among other things, Woodmen provides sewer service within its service area, as well as the service areas of Paint Brush Hills Metropolitan District, Falcon Highlands Metropolitan District, and portions of the 4-Way Ranch Metropolitan District and Meridian Service Metropolitan District, all located in El Paso County, Colorado and generally depicted on the attached **Exhibit A**. To provide this service, Woodmen owns and operates a 1.3-million gallons per day ("MGD") wastewater treatment plant commonly known as the Woodmen Hills Regional Water Reclamation Facility (the "Plant").

B. Woodmen anticipates the need to upgrade the Plant to enhance wastewater treatment processes to comply with anticipated future regulations that will impose stricter effluent limitations (the "Technological Upgrades").

C. Horton is a private developer of residential communities and is under contract to purchase 768.233 acres of real property in El Paso County, Colorado that it seeks to develop into a mixed-use residential community containing approximately 3,500 Single-Family Residential Equivalents, as depicted on **Exhibit B** (the "Horton Property"). The Grandview Reserve Metropolitan District No. 1 has been organized and established to provide water and other services to the Horton Property. Horton desires to have Woodmen provide sewer service to the Horton Property.

D. The Plant currently has sufficient capacity to serve Woodmen's existing service areas and approximately 900 additional Single-Family Residential Equivalents, but has no additional capacity for further extraterritorial service, including the Horton Property, without expansion which would require increasing the Plant's hydraulic loading by approximately 0.602 MGD (the "Capacity Expansion"). If the Plant is to be expanded, efficiencies will be gained by sizing the Capacity Expansion to include the Horton Property and other El Paso County properties in the vicinity of Woodmen including those commonly referred to as KO1515 (68 acres), Silver Star (32 acres), Parcel A (116 acres), and other parcels (collectively, 168 acres), as depicted on Exhibit B. To provide sewer service to all of these properties, Woodmen will need to expand the Plant to reach a minimum design capacity of 2.5 MGD, and to include the Technological Upgrades described in **Exhibit C**. The Capacity Expansion and Technological Upgrades are referred to herein as the "Expansion." Permitting, design, and construction of the Expansion is anticipated to take at least five years.

E. The Parties have determined that having Woodmen expand its wastewater service to include the Horton Property and other nearby properties likely to develop, and having the Parties jointly fund the Expansion under the terms and conditions of this Agreement, will benefit the Parties and future residents of Woodmen and the Horton Property.

F. Woodmen is willing to extend sewer service to the Horton Property upon the completion of funding of the Expansion and reserve for Horton a minimum number of Taps for wastewater service by the Plant and the Expansion, under the terms and conditions of this Agreement, which include Horton's construction and dedication to Woodmen of necessary sewer infrastructure as described in this Agreement.

NOW, THEREFORE, in consideration of the covenants and mutual agreements contained in this Agreement, and other good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged, the Parties agree as follows:

AGREEMENT

1. **Incorporation of Recitals**. The Parties hereby acknowledge and agree to the Recitals set forth above, which are incorporated herein by this reference.

2. **Definitions**. The definitions in this paragraph apply to this Agreement, and any amendment thereto, except where otherwise specified.

2.1 **Conditional Acceptance** means acceptance by Woodmen of Wastewater Facilities, or applicable portion thereof, constructed by Horton, granted when the following conditions have been met by Horton to the satisfaction of Woodmen: (A) the Wastewater Facilities, has been constructed by Horton (or its agents or contractors), and pressure tested, vacuum tested, jet cleaned, and televised, all of which may be performed by Woodmen at Horton's expense; (B) all surface improvements and restoration, including landscaping and erosion control measures, are complete, but if during the non-irrigation season (November 1 through March 31), no landscaping is required until the next growing season; (C) all necessary approvals of design on construction, contracts, and agreements have been fully executed and delivered to Woodmen, and to the extent lines are in future rights-of-ways which are not yet recorded, Horton has granted an easement to Woodmen for operation and maintenance, in accordance with Woodmen's Bylaws, Rules, and Regulations dated January 27, 2022, as they may be amended (the "Woodmen Regulations"); (D) the project statement and certification of costs, and bill of sale, are submitted in tabular form listing pipe sizes, footage for different sizes, and appurtenances with quantity, and are presented to Woodmen; and (E) record drawings have been presented to Woodmen, in printed hard copy and AutoCAD and PDF files on CD.

2.2 **CPI** means the Consumer Price Index for All Urban Consumers, All Items, for the Denver-Aurora-Lakewood area, as published by the U.S. Department of Labor, Bureau of Labor Statistics, or successor index should publication of the Index cease. Adjustments based on the CPI shall be equal to the percentage increase or decrease in the CPI issued for the calendar year in which such adjustment is to be made (or if the CPI for such year is not yet publicly available, the CPI for the most recent calendar year for which the CPI is publicly available) as compared to the CPI issued for the year in which the Effective Date occurred.

2.3 **Design Capacity** means the capability to receive a specific domestic wastewater flow, expressed as the maximum daily hydraulic capacity in million gallons per day ("MGD") for a domestic wastewater treatment works, as the firm pump capacity for a Lift Station, and as the peak instantaneous hydraulic flow capable of being conveyed for an Interceptor.

2.4 **Final Acceptance** means acceptance by Woodmen of the Wastewater Facilities, or applicable portion thereof, constructed by Horton (or its agents or contractors), granted at the later of: (a) the end of the Warranty Period, or (b) the completion of any correction and repair of any deficiencies identified during the Warranty Period in a manner satisfactory to Woodmen. Woodmen is responsible for repair, maintenance and operation of the Wastewater Facilities after Final Acceptance.

2.5 **Force Main** means pipelines that convey Wastewater under pressure from the discharge side of a Lift Station.

2.6 **Improvement** means any permanent or temporary building, structure, facility, improvement or betterment upon, or for any use or occupancy of any property to which park and recreation or water and wastewater service is or may be furnished, including without limitation use for any domestic, commercial, industrial, construction, irrigation or fire protection purpose, whether public or private.

2.7 **Interceptor Sewer** or **Interceptor** means a sewer line that conveys sewage by gravity, if it performs one or more of the following functions as its primary purpose: (a) it intercepts domestic wastewater from a final point in a collection system and conveys such waste directly to a treatment plant; (b) it is intended to replace an existing treatment plant or Lift Station and transports the collected domestic wastewater to an adjoining collection system or interceptor sewer for treatment; (c) it transports the domestic wastes from one or more municipal collection systems to a regional treatment plant; (d) it is intended to intercept an existing major discharge of raw or inadequately treated wastewater for transport directly to another Interceptor Sewer, Lift Station, or treatment plant.

2.8 **License** means a written permit or license issued by Woodmen in accordance with the Woodmen Regulations.

2.9 **Licensed Premises** means the land and Improvements to which wastewater service is furnished under an approved License for service. The owner of the Licensed Premises is the person who holds legal title to the subject property.

2.10 **Lift Station** means a wastewater pumping station that pumps wastewater to a different point when the continuance of the gravity sewer at reasonable slopes would involve excessive depths of bury or that pumps wastewater from areas too low to drain into available sewers.

2.11 **Local Sanitary Sewer Collection Systems** means all sanitary sewer collection pipelines sized ten inches or less and necessary to serve the Horton Property.

2.12 **Major Interceptor** means any Interceptor sized twelve inches or greater.

2.13 **Main** means those pipes and appurtenant facilities used for collecting wastewater.

2.14 **Regional Sanitary Sewer Systems** means all sanitary sewer collection pipelines sized greater than 10 inches, Major Interceptors, Lift Station and Force Mains necessary to serve the Horton Property and other extraterritorial service areas pursuant to Paragraph 9.3.

2.15 **Sewage** or **Wastewater** means a combination of liquid wastes which may include chemicals, household wastes, human excreta, animal or vegetable matter in suspension or solution, or other solids in suspension or solution which are discharged from a dwelling, building or other structure, with pretreatments, if necessary, that are suitable for treatment at publicly owned treatment works providing standard waste treatment.

2.16 **Single-Family Residential Equivalent ("SFE")** means each single-family connection or connections equivalent to one single-family residence. Currently, one SFE is equal to: one "detached" single-family unit, which means a building or structure used or designed to be used as only one residential unit; each separate residential unit within an "attached" building, such as a duplex or paired lot; and each separate residential unit within a "multifamily" building, such as a townhome or apartment building.

2.17 **Tap** means the physical connection to a wastewater Main that enables wastewater service to be provided to the Licensed Premises.

2.18 **Tap Fee** means a fee required for connection to and service by Woodmen's wastewater system, which shall be paid in the amounts and at the times specified in this Agreement.

2.19 **Underdrain** means a dewatering and/or drainage system designed to intercept, collect, and/or transport groundwater.

2.20 **Warranty Period** means the twenty-four (24) month period of time following Conditional Acceptance, during which Horton must timely correct or repair deficiencies in the Wastewater Facilities Horton constructed pursuant to this Agreement.

2.21 **Wastewater Service Line** means that part of wastewater line for any Licensed Premises connecting at the Tap to the Main.

2.22 **Wastewater Facilities** means, collectively, the Local Sanitary Sewer Collection Systems and the Regional Sanitary Sewer Systems, together with all appurtenant and necessary manholes, services, Taps, pump stations, associated materials, property, and equipment collecting wastewater from individual customers, but excluding the Plant and the Expansion.

3. **Extraterritorial Sewer Service.**

3.1 Woodmen shall be the exclusive wastewater service provider to the Horton Property in perpetuity.

3.2 Woodmen shall issue Taps for such extraterritorial service at the Horton Property in accordance with Paragraph 4.

3.3 Nothing in this Agreement shall prevent Woodmen in its sole discretion from providing future extraterritorial service to areas other than the Horton Property.

4. **Tap Reservation.**

4.1 Upon execution of this Agreement, Woodmen shall reserve, out of the existing capacity of the Plant, sufficient capacity to serve 900 Taps equivalent to 900 SFEs within the Horton Property (the "Horton Reserved Taps"). Woodmen shall make available and Horton shall purchase on a nonrefundable basis the Horton Reserved Taps at Woodmen's current 2022 Tap Fee of $8,750 per Tap according to the following takedown schedule:

4.1.1 100 Taps within thirty (30) days of execution of this Agreement.

4.1.2 200 Taps prior to Woodmen's Conditional Acceptance of a Lift Station and Force Main constructed pursuant to Paragraph 9.3.

4.1.3 300 Taps within one year of the Conditional Acceptance of the Lift Station and Force Main constructed pursuant to Paragraph 9.3.

4.1.4 300 Taps prior to the Final Acceptance of the Lift Station and Force Main constructed pursuant to Paragraph 9.3.

4.2 This Agreement limits the Horton Reserved Taps to 900 SFE during the development of the Expansion, but to the extent Woodmen determines the Plant has additional hydraulic capacity to serve more than the 900 Horton Reserved Taps, Woodmen may in its sole discretion issue additional Taps for the Horton Property during the development of the Expansion at Woodmen's 2022 Tap Fee of $8,750 per Tap, adjusted based on the CPI.

4.3 Following completion of the Expansion, Woodmen shall issue on an as-needed basis 2,600 additional Taps to serve up to 3,500 SFEs on the Horton Property (which includes the 900 Horton Reserved Taps), upon Horton's payment of 70% of Woodmen's 2022 Tap Fee of $8,750 per Tap, adjusted based on the CPI. For example, in the first calendar year following completion of the Expansion, Horton shall pay to Woodmen $5,250 for each Tap. In the following calendar year, Horton shall pay Woodmen a Tap Fee equal to 70% of $8,750 adjusted based on the CPI.[1] Said discount shall be available for Horton's purchase of the 2,600 Taps following completion of the Expansion for a period of twenty years from the date on which Woodmen submits a Certification of Final Completion of the Expansion to the Water Quality Control Division (the "WQCD"). To the extent Woodmen determines that the Plant and the Expansion has additional hydraulic and organic capacity to serve more than the 3,500 SFEs, Woodmen may in its sole discretion issue additional Taps for the Horton Property at Woodmen's then-prevailing Tap Fee. Woodmen's obligation to issue additional sewer Taps as provided in this Paragraph 4.3

[1] ($8,750 * Index Adjustment) * 0.70.

shall expire twenty (20) years from the date on which Horton purchases the last of the 900 Horton Reserved Taps.

4.4 Except for the Tap Fees applicable to the Horton Reserved Taps payable pursuant to the schedule set forth in Paragraph 4.1 above, all Tap Fees necessary for wastewater service to a residence within the Horton Property shall be payable at the time of issuance of a building permit for such residence.

4.5 The Horton Reserved Taps are nonrefundable and shall be assignable or transferrable, without Woodmen's prior consent, only to Horton's successor-in-interest in all or a portion of the Horton Property pursuant to Paragraph 22.1. Except as provided herein, the Horton Reserved Taps shall not be assignable or transferrable to any party without Woodmen's prior written consent.

4.6 All extraterritorial sewer service to the Horton Property requires Horton's strict compliance with the Woodmen Regulations and the Woodmen Water and Wastewater System Standards and Specifications dated March 24, 2011 and last revised December 2021, as they may be amended (the "Woodmen Standards and Specifications"). In particular, notwithstanding any Tap reservation or issuance, no person shall connect to or disconnect from, or repair or otherwise work on any Wastewater Facility or Wastewater Service Line without first obtaining a License from Woodmen pursuant to the Woodmen Regulations, except for Horton during the Warranty Period. Notwithstanding the foregoing, Horton shall have no liability with respect to the acts or omissions of third parties outside of Horton's reasonable control.

5. **Estimated Costs of the Expansion**.

5.1 Current Estimate of Costs. The current estimate of the total cost of the Expansion (the "CEC") is approximately $38 million, as itemized in **Exhibit D**. The CEC is expected to increase over time.

5.2 Allocation of Costs. The total cost of the Expansion (the "Total Cost") shall be allocated to the Parties based on the relative benefits of the Expansion that will accrue to each Party, as determined by Woodmen. As of the Effective Date, the Parties agree that the Total Cost shall be allocated as follows: Horton shall bear 32.59% of the Total Cost ("Horton's Allocable Share"); and Woodmen shall bear 67.41% of the Total Cost ("Woodmen's Allocable Share"), as reflected on **Exhibit E** (the "Total Cost Allocation"), subject to revision as discussed below. Horton's Allocable Share and Woodmen's Allocable Share shall be adjusted as the CEC and Total Cost Allocation are adjusted throughout the permitting, design, and construction of the Expansion, as described in Paragraphs 6–7 below. Woodmen may, in its sole discretion, design and construct the Expansion at a lower hydraulic capacity (but in no event less capacity than would be necessary to serve 3,500 taps reserved herein), in which case it will reallocate Horton's Allocable Share and Woodmen's Allocable Share accordingly.

6. **Allocation of Costs and Phases of the Expansion**.

6.1 During all phases set forth below, Woodmen shall have the final decision on the type and number of facilities comprising the Expansion and the estimated costs thereof.

Woodmen's determination of any adjustments to the Total Cost Allocation that are reflected in the Total Cost Allocation and subsequent updates shall be final.

6.2 Prior to incurring costs for each successive Phase of the Expansion (defined below), Woodmen shall provide Horton a revised Updated CEC, reflecting the then-estimated Total Cost of the Expansion and an updated Total Cost Allocation and bases therefor, as further described below in Paragraph 7, and Horton shall deliver to Woodmen Letters of Credit (defined below), as further described below in Paragraphs 6.4 and 7.3.

6.3 Horton shall have no right to reject, object to, revise or challenge any Updated CEC or the Expansion designs, plans or specifications, or terminate this Agreement based on any Updated CEC, Total Cost or Total Cost Allocation, so long as the adjustment to each Party's Allocable Share is equal to or less than 5% of each Party's Allocable Share as of the Effective Date.

6.4 Phases of Permitting, Design and Construction of the Expansion. Woodmen shall have the sole right and obligation to permit, design, manage construction of and own the Expansion, under the terms and conditions of this Agreement, and Horton shall have no legal or equitable interest in the Plant or Expansion. The Expansion shall be pursued and completed with commercially reasonable efforts by Woodmen in "Phases," as described below.

6.4.1 Phase 1: Within thirty (30) days of the Effective Date, Horton shall deliver to Woodmen the Phase 1 Letter of Credit (defined below). Upon receipt of the Phase 1 Letter of Credit, Woodmen shall initiate and pursue with commercially reasonable efforts to completion the Phase 1 activities for the Expansion. The Phase 1 activities include the following activities and may entail additional ancillary activities:

(i) Preparation and submittal of an application for preliminary effluent limitations ("PELs") or other water quality planning targets ("WQPTs") for the Expansion to the WQCD pursuant to 5 C.C.R. § 1002-22, as amended;

(ii) Modification of the concept plan for the Expansion, as necessary;

(iii) Preparation and submittal of a site location approval application for the Expansion ("Site Application") to the WQCD pursuant to 5 C.C.R. § 1002-22, as amended; and

(iv) Preparation and submittal of 1041 permit application for the Expansion to El Paso County or obtaining confirmation of exemption therefrom.

6.4.2 Phase 2: Upon receipt of approved PELs or other WQPTs, an approved Site Application, and a County-approved 1041 permit or relevant exemption for the Expansion, Woodmen shall prepare and deliver to Horton a revised CEC reflecting the then-estimated Total Cost of the Expansion (the "First Updated CEC") that identifies the components of the Expansion and the associated costs of each as of the date of the First Updated CEC, a revised Total Cost Allocation (the "First Total Cost Allocation"), each Party's Allocable Share, and the bases therefor. Within thirty (30) days of its receipt of the First Updated CEC and First Total Cost Allocation, Horton shall deliver to Woodmen the Phase 2 Letter of Credit (defined below). Upon receipt of the Phase 2 Letter of Credit, Woodmen shall initiate and pursue with commercially reasonable efforts to completion the Phase 2 activities for the Expansion. The Phase 2 activities include the following activities and may entail additional ancillary activities:

(i) Preparation and submittal of a design application of the Expansion to the WQCD pursuant to 5 C.C.R. § 1002-22, as amended; and

(ii) Preparation of final design of the Expansion based on the approved PELs or WQPTs, the approved Site Application, and the design application.

6.4.3 Phase 3: Upon design approval by the WQCD, Woodmen shall prepare and deliver to Horton the Phase 2 final design, a revised CEC reflecting the then-estimated Total Cost of the Expansion (the "Second Updated CEC"), and a revised Total Cost Allocation (the "Second Total Cost Allocation") and the bases therefor. Within thirty (30) days of its receipt of the Second Updated CEC and Second Total Cost Allocation, Horton shall deliver to Woodmen the Phase 3 Letter of Credit (defined below). Upon receipt of the Phase 3 Letter of Credit, Woodmen shall initiate and pursue with commercially reasonable efforts to completion the Phase 3 activities for the Expansion. The Phase 3 activities include the following activities and may entail additional ancillary activities:

(i) The Issuance of Requests for Bids to Construct the Expansion and Receipt and Review of Bids. Woodmen and Horton may review the bids but Woodmen shall have the sole discretion to accept or reject any bid. Upon receipt of bids for the construction of the Expansion, Woodmen may prepare and deliver to Horton a revised CEC (the "Third Updated CEC") and a revised Total Cost Allocation (the "Third Total Cost Allocation") to reflect any differences between the Second Updated CEC and the received bids. The Third Updated CEC will include a 10% upward adjustment to allow for bid increases and change orders during the construction of the Expansion. Within thirty (30) days of its receipt of the Third Updated CEC and Third Total Cost Allocation, Horton shall, if necessary, deliver to Woodmen an amended Phase 3 Letter of Credit reflecting any increase or decrease in Horton's share of the cost to construct the Expansion, as reflected by the Third Updated CEC and Third Total Cost Allocation. To the extent Horton's amended Phase 3 Letter of Credit does not qualify as money that Woodmen has appropriated "equal to or in excess of the contract amount" under C.R.S. § 24-91-103.6, as amended, at the time Woodmen accepts a bid for construction of the Expansion under Phase 3, which decision shall be made solely by Woodmen, Horton shall, within fifteen (15) days, deliver funds to Woodmen in the amount necessary to cover the difference provided such delivery of funds is accompanied by a reduction in the applicable Letter of Credit.

(ii) Managing Expansion Construction. Woodmen shall use commercially reasonable efforts, without negligence or misconduct, to direct, manage and complete the construction of the Expansion in accordance with applicable law. Woodmen shall be solely responsible for obtaining any necessary permits or approvals with the applicable local, state or federal authorities, contracting for the construction of the Expansion with any contractors or subcontractors and, subject to Horton's responsibility to deliver Horton's Allocable Share to Woodmen, timely paying all fees, labor and material costs and other amounts payable in connection with the Expansion. Woodmen shall provide copies of such permits and approvals, including but not limited to any compliance schedule related thereto (the "Compliance Schedule"), to Horton within fifteen (15) days of receipt thereof. Except for the payment of Horton's Allocable Share and the securitization thereof as set forth in Paragraph 7, Horton shall have no responsibility to fund, construct, or review plans or specifications with respect to any portion of the Expansion, and Horton assumes no liability with respect to the designs, plans or specifications prepared or work performed by Woodmen. Horton shall not be responsible for financial penalties associated with Woodmen failing to comply with the Compliance Schedule or other terms and conditions of Woodmen's discharge permit except to the extent caused or contributed to by Horton's default under this Agreement.

(iii) Change Orders; Bid Increases. Woodmen shall have the sole right to approve change orders or bid increases as necessary or desirable, in Woodmen's sole discretion, to complete the Expansion. If, as a result of any change order or bid increase, the cost of construction of the Expansion increases above the approved bid, Woodmen may require Horton, within thirty (30) days of receipt of notice from Woodmen, to deliver an amended Phase 3 Letter of Credit reflecting the increase in such cost.

6.4.4 Progress Meetings. Every three (3) months beginning with the initiation of Phase 1 activities, the Parties shall meet in person or remotely at times and locations to be determined by the Parties to discuss the status of the Expansion and any problems, delays or increased costs anticipated by Woodmen in executing the Expansion.

7. **Joint Funding of the Expansion; Horton Financial Security**. The Parties agree to jointly fund all Phases of the Expansion, based on each Party's Allocable Share of the Total Cost, as reflected in the then-current Updated CEC and Total Cost Allocation.

7.1 Woodmen Financial Capability: Woodmen shall fund Woodmen's Allocable Share of the Expansion and its failure to do so shall be a default of its obligations under this Agreement. Prior to Phase 1 of the Expansion, Woodmen shall demonstrate to Horton that Woodmen has the capacity to fund Woodmen's Allocable Share through the issuance of revenue bonds and shall, at each Phase, issue such bonds in an amount equal to Woodmen's Allocable Share under the relevant Phase, as reflected in the then-current Updated CEC and Total Cost Allocation.

7.2 Horton Monthly Payments. Horton shall fund Horton's Allocable Share of the Expansion and its failure to do so shall be a default under this Agreement.

7.2.1 Woodmen shall invoice Horton on a monthly basis for Horton's Allocable Share incurred during the previous month for the Phase 1, Phase 2 and Phase 3 activities, as applicable, with an itemization of the activities for which the costs were incurred, which itemizations shall include the total cost of all work performed and Horton's Allocable Share of such costs. Horton shall pay all invoiced amounts in full within thirty (30) days of its receipt of each invoice. If Horton disputes any charges on a particular invoice, it shall nonetheless pay the invoice in full, but shall reserve the right to contest the disputed charges. If Horton disputes any invoiced charges, the Parties shall confer and attempt to resolve the dispute. If the Parties are unable to resolve the dispute, either Party refer the matter to arbitration as provided in Paragraph 15 below.

7.2.2 Horton's failure to timely pay in full any portion of an invoice shall constitute a default under this Agreement ("Failure to Pay"). Any payment due from Horton not received by Woodmen within thirty (30) days of Horton's receipt of an invoice shall thereafter incur a late fee equal to two percent (2%) of the invoiced amount per month. Except for the aforementioned late fee, such payment shall not bear interest or incur any other fees or penalties. If any payment and late fee are not paid with sixty (60) days of Horton's receipt of an invoice, Woodmen may seek payment under the applicable Letter of Credit and pursue all available remedies under Paragraph 15 below, including but not limited to seeking damages to reimburse Woodmen for its expenditures on the Expansion made in reliance on Horton's promises hereunder.

7.3 Horton Letters of Credit.

7.3.1 As provided in the preceding Paragraph 7.2, Horton shall provide Woodmen with a Letter of Credit at each Phase of the Expansion. Each Letter of Credit shall: (i) name Woodmen as the beneficiary; (ii) be issued by a financial institution reasonably acceptable to Woodmen; (iii) have an initial expiration date of not less than seven hundred thirty (730) days after the date of its issuance and provide for automatic annual extensions such that it remains effective through its corresponding Phase; (iv) provide that the issuer will deliver a sixty (60)-day advance written notice to beneficiary in the event issuer elects not to extend or elects to otherwise terminate the Letter of Credit; (v) permit partial and full draws; (vi) permit draws to be initiated by facsimile in the event the issuing institution does not have a Denver Metropolitan Area branch at which presentation for draws can be made; (vii) be in substantially the form attached hereto as **Exhibit F**; and (viii) not contain any conditions upon a draw request other than a certification by the beneficiary substantially in the forms shown on Exhibit F. At least twenty (20) days prior to the date of delivery of each Letter of Credit, Horton shall deliver the proposed form of Letter of Credit to Woodmen for review and approval. If Woodmen provides written comments to Horton on the form of Letter of Credit which are not addressed to the satisfaction of Woodmen prior to the date of delivery, then Horton shall instead deliver Good Funds into an escrow account in the full amount of the required Letter of Credit, under an agreement that entitles Woodmen to withdraw said funds to pay for the activities contemplated under this Agreement. Horton may be permitted to replace the same with a Letter of Credit, provided the form of Letter of Credit is approved by Woodmen prior to such replacement.

7.3.2 The face amount of each Letter of Credit shall be as follows:

(i) Phase 1 Letter of Credit: Ten percent (10%) of Horton's Allocable Share of the then-current Updated CEC and Total Cost Allocation.

(ii) Phase 2 Letter of Credit: Twenty percent (20%) of Horton's Allocable Share of the then-current Updated CEC and Total Cost Allocation.

(iii) Phase 3 Letter of Credit: The remaining balance of Horton's Allocable Share of the then-current Updated CEC and Total Cost Allocation.

7.4 Final Accounting. Within six (6) months of the completion of all construction of the Expansion, Woodmen shall provide to Horton a final accounting of the Total

Cost and Total Cost Allocation and the Parties shall, within sixty (60) days, reconcile any respective overpayments or underpayments reflected in the final accounting.

7.5 Horton Failure to Fund Its Allocable Share.

7.5.1 Phases 1-2. Except as provided by Paragraph 22.4 below, if at any time during Phases 1 or 2 of development of the Expansion Horton fails to deliver a Letter of Credit as required hereunder or gives Woodmen written notice that it intends to cease funding of the Expansion, this Agreement shall terminate, and neither party shall have any remaining liability or obligation to the other except that Horton shall be liable to Woodmen for all actual costs, expenditures and financial liabilities that Woodmen has incurred or made towards the permitting, design and construction of the Expansion ("Woodmen's Reliance Costs") up to the date of termination, it being acknowledged by the Parties that those permits, designs and construction may, absent the Expansion, be worthless to Woodmen and Woodmen may have to re-permit, re-design and re-construct the Plant to reflect Plant capacities much smaller than the Expansion, which decision shall solely be in Woodmen's discretion. In the event Horton fails to pay Woodmen's Reliance Costs within thirty (30) days of being invoiced, Woodmen may seek such payment of Woodmen's Reliance Costs under the effective Horton Letter of Credit and pursue all available remedies under Paragraph 15 below, including but not limited to seeking damages for the balance owed by Horton. Under no circumstances, including in the event Horton or its successor terminates the Agreement under this Paragraph 7.5.1, shall Horton be entitled to any reimbursement of its costs or payments made prior to its termination, including but not limited to Tap Fees for the Horton Reserved Taps or subsequently issued Taps; except, however, Horton may assign or transfer any purchased Taps as provided for in Paragraph 4.5.

7.5.2 Phase 3. Once Woodmen initiates the Phase 3 activities, neither Horton nor its assignees shall have any right to terminate this Agreement or to refuse to participate in the funding of the Expansion.

8. **Capacity Allocation**. Woodmen shall reserve sufficient treatment capacity in the Plant and, when constructed, the Expansion, to serve 900 Taps within the Horton Property for a period based on the later of: (a) seven (7) years from the date on which the WQCD issues site location approval for the Lift Station to be constructed pursuant to Paragraph 9.3, or (b) five (5) years from the date on which Horton terminates the Agreement under Paragraph 7.5.1. Woodmen shall reserve sufficient treatment capacity in the Expansion to serve an additional 2,600 Taps (for a total maximum of 3,500 Taps) within the Horton Property for a period of twenty (20) years from the date on which Horton purchases the last of the 900 Horton Reserved Taps. After expiration of any period in which Woodmen must reserve treatment capacity for the Horton Property, Woodmen may provide to a third party the balance of the capacity in the Plaint or the Expansion represented by the remaining Taps. Subject to this reservation, Woodmen may in its sole discretion enter into agreements, or expand its service area, to provide sewer treatment at the Plant and Expansion to properties in addition to the Horton Property.

9. **Sanitary Sewer Facilities**. As a condition to Woodmen's obligation to extend sewer service to the Horton Property, Horton shall design and install, subject to review and approval by Woodmen, the Wastewater Facilities.

9.1 Wastewater Service Lines. Horton shall design and construct all Wastewater Service Lines within the Horton Property pursuant to the Woodmen Regulations and the Woodmen Standards and Specifications. Subject to warranty and acceptance procedures under the Woodmen Standards and Specifications, Woodmen shall own and operate all sanitary sewer facilities constructed pursuant to this Agreement.

9.2 Local Sanitary Sewer Collection Systems. All Local Sanitary Sewer Collection Systems shall be constructed by Horton in accordance with the Woodmen Standards and Specifications, including but not limited to Woodmen's review, inspection, approval, and acceptance processes. Local Sanitary Sewer Collection Systems shall not be eligible for reimbursement under Paragraph 9.5 unless the Parties otherwise agree in writing.

9.3 Regional Sanitary Sewer Systems.

9.3.1 The Parties anticipate that a regional Lift Station and Force Main, the estimated locations of which are depicted on **Exhibit G**, will be necessary to serve the Horton Property pursuant to this Agreement, and that the Force Main will be a double barrel pipeline with each pipeline sized at no less than eight (8) inches in diameter.

9.3.2 All Regional Sanitary Sewer Systems must be adequately sized to serve the Horton Property and any other extraterritorial service areas approved by Woodmen in the future according to Paragraph 9.5. Such Regional Sanitary Sewer Systems shall be located, constructed, and warranted by Horton as required by this Agreement and in conformance with the Woodmen Standards and Specifications. At Woodmen's own expense, Woodmen may direct installation of additional conduits to trenches associated with construction of Regional Sanitary Sewer Systems.

9.3.3 Horton shall use commercially reasonable efforts to acquire all necessary lands, easements, rights of way, or other interests in real property necessary to construct the Regional Sanitary Sewer Systems and, if unable to do so, agrees to compensate Woodmen to the extent Woodmen seeks to acquire such necessary lands, easements, rights of way, or other interests in real property. To the extent Horton acquires the lands, easements, rights of way, or other interests in real property necessary to construct Regional Sanitary Sewer Systems, Horton shall convey such real property interests to Woodmen in accordance with the Woodmen Regulations.

9.3.4 Horton shall obtain all necessary governmental approvals necessary for any proposed Regional Sanitary Sewer Systems, including but not limited to site location approval, design and plan approvals, basis-of-design approval, and any other required local, state, and or federal approvals. No permit request, submittals, and/or applications may be made without Woodmen's approval and signature. All permits shall name Woodmen as the ultimate owner and operator of the facility.

9.3.5 Any Lift Station and Force Main constructed by Horton under this Agreement shall be conveyed to Woodmen, subject to Woodmen's warranty and acceptance procedures under the Woodmen Standards and Specifications. Upon Conditional Acceptance, Woodmen shall allow connection of Taps to the Woodmen wastewater collection and treatment system for wastewater service, though Horton retains the responsibility for correcting and repairing any deficiencies identified during the Warranty Period before Final Acceptance in a manner satisfactory to Woodmen. This Agreement shall constitute a License from Woodmen to Horton over any portion of the Licensed Premises necessary for Horton to correct or repair any deficiencies in the Wastewater Facilities during the Warranty Period.

9.4 Costs of Review and Inspection. Prior to submitting any applications for governmental approvals of any Wastewater Facilities, Horton shall submit draft applications, plans, and specifications to Woodmen for review and comment. Woodmen shall submit any comments to Horton's applications, plans or specifications within thirty (30) days of receipt thereof. Woodmen may invoice Horton, and Horton shall, within thirty (30) days, pay such invoices for the reasonable costs of Woodmen's review of such applications, plans, and specifications, as well as inspection of, all Wastewater Facilities within the Horton Property in accordance with the Woodmen Regulations. Woodmen's invoices may include reasonable charges for the internal costs to Woodmen of time spent by Woodmen's staff on such review and inspection, in addition to the reasonable costs charged by any outside consultants, together with any amounts charged for out-of-pocket costs and administrative fees.

9.5 Reimbursement for Oversizing. Woodmen may require any Regional Sanitary Sewer Systems to be sized larger than would be required to serve only the Horton Property, in which case Woodmen shall require, as a condition to allowing any third party to connect to the oversized facility, that the third party pay to Woodmen a pro rata share of the costs incurred by Horton to design, permit, entitle and construct the facility (the "Horton Facility Costs"), which Woodmen shall remit to Horton, less a two percent (2%) administrative fee that Woodmen shall retain, within thirty (30) days of receipt thereof. Upon completion of the Regional Sanitary Sewer Systems, Horton shall provide Woodmen with documentation, in reasonable detail, establishing the Horton Facility Costs applicable to each Regional Sanitary Sewer System. Each third-party's pro-rata share of the Horton Facility Costs shall be calculated based on the relative capacity of the Regional Sanitary Sewer System facility to be utilized by the third party. The obligation to repay its pro-rata share of the Horton Facility Costs shall be recited in a written agreement between the applicable third party and Woodmen, and Woodmen shall be solely responsible for the collection and remittance to Horton of such pro-rata share. In the event a third party is permitted to connect to the Regional Sanitary Sewer Systems without paying its pro-rata share of the Horton Facility Costs, Woodmen shall be in default of this Paragraph. This right of reimbursement shall expire ten (10) years from the date on which the oversized sewer facility is accepted by Woodmen.

9.6 Underdrains. Underdrains are not part of the Wastewater Facilities, and Woodmen shall have no responsibility for, nor shall it take ownership of, any underdrains or any associated augmentation or replacement requirements. For underdrains that are proposed to be located in the same trench as any Wastewater Service Line or other sanitary sewer system component for the purpose of dewatering the trenches in which such lines or components are located, Horton shall first submit and obtain Woodmen's approval of the designs of such underdrains depicted on the same plans as the proposed Wastewater Service Line or other sanitary sewer system component, and Horton shall allow Woodmen the opportunity to inspect and approve such underdrains after installation and before they are covered with soil to ensure their installation is consistent with approved designs and are otherwise in conformance with the Woodmen Regulations.

9.7 Flow Measurement: Horton shall design and install metering facilities internal to the Lift Station that monitor and transmit wastewater flows electronically in real-time to Woodmen via Supervisory Control and Data Acquisition ("SCADA") or comparable system. Woodmen also may require Horton to design and install metering within manholes in certain interceptors and Local Sanitary Sewer Collection Systems if necessary to confirm design capacities are not exceeded or to monitor wastewater flows. All meters shall be conveyed to Woodmen as provided in the Woodmen Regulations and the Woodmen Standards and Specifications.

10. **Applicable Wastewater Rates, Fees and Charges.**

10.1 Wastewater Service Fees. Except as otherwise provided in this Agreement, customers within the Horton Property receiving wastewater service from Woodmen ("Customers") shall pay the same wastewater service rates, fees, charges, surcharges, and assessments or other financial liabilities however termed required for Woodmen's wastewater services as Woodmen's in-district residents, as they are modified from time to time, in accordance with the Woodmen Regulations. Billing, collection and administration of service fees shall be performed by Woodmen, in accordance with the Woodmen Regulations. Neither Horton nor Grandview Reserve Metropolitan District No. 1 shall have any responsibility to collect service fees, or any liability with respect to Customers' failure to pay such service fees, or failure to comply with the Woodmen Regulations. Woodmen acknowledges that additional mills may be levied by Grandview Reserve Metropolitan District No. 1.

10.2 Pursuant to Paragraph 4 above, Horton shall pay Tap Fees for each Tap served by the Plant or the Expansion.

11. **Water Rights, Return Flows, and Water Quality; Conditions of Service**.

11.1 Water Service Within Horton Property. As of the Effective Date, it is anticipated that Grandview Reserve Metropolitan District No. 1 will be the water provider to the Horton Property. Nothing in this Agreement requires Woodmen to provide water service of any kind to the Horton Property; however, if requested by Horton, Woodmen may in its sole discretion and pursuant to a future agreement provide water service to some or all of the Horton Property. Horton shall, as a condition of receiving sewer service from Woodmen, cause Grandview Reserve Metropolitan District No. 1 and any other water provider to agree to the following provisions.

11.1.1 Return Flows. Grandview Reserve Metropolitan District No. 1, or other water providers to the Horton Property, shall retain ownership of any reusable effluent associated with the first uses of the water rights supplying the Horton Property, based on Woodmen's tracking and accounting for wastewater treated and released from the Plant and Expansion, subject to the following conditions:

(i) Woodmen has no responsibility to measure or account for the first 50.4 acre-feet per year of any water provider's reusable return flows discharged from the Plant or Expansion (based on inflow at 50,000 GPD annual average flow and 10% system losses); rather, ownership of those return flows is ceded to Woodmen, and Woodmen may in its sole discretion account for and take credit for those return flows in its own replacement plan(s). Horton will retain adequate return flow credits for any required 2% and/or 4% depletion returns.

(ii) After the minimum threshold of 50.4 acre feet per year of return flows is met by any water provider, such water provider may claim up to 75% of any remaining reusable return flows to which the provider is entitled under its water rights determinations that are discharged from the Plant or Expansion, calculated and allocated on a monthly basis. Woodmen may claim the right to reuse the remaining 25% of said reusable return flows. As an example, if a water provider's measured influent at the Plant or Expansion is 75,000 gallons per day (on an average annual basis) of fully reusable water, which results in 67,500 gallons per day of reusable return flows (assuming a 10% system loss), then that provider would be entitled to claim 75% of 67,500 minus 45,000, or 22,500 x .75 which equals 16,875 gallons per day of reusable effluent. Woodmen would own and claim reuse credit for the balance, which equals 5,625 gallons per day of reusable effluent. To the extent Horton's return flows exceed the threshold above, Woodmen shall track and report such return flows on a monthly basis.

(iii) Any water provider seeking to claim the right to reuse a portion of the effluent attributable to their influent into the Plant or Expansion must install adequate metering for their influent pursuant to Paragraph 9.7. Any reusable return flows associated with flows into the Woodmen sewer system that are not metered shall be deemed relinquished and may be claimed by Woodmen.

(iv) Credit for reusable effluent shall be calculated on a water year basis (November 1 through October 31).

11.1.2 <u>Future Reclaim or Reuse Facilities</u>. If Woodmen seeks to construct in the future facilities to physically capture and reuse effluent from the Plant and Expansion, water providers serving the Horton Property whose wastewater is discharged into Woodmen's sewer system will be offered to participate in such facilities. Horton agrees to and shall not oppose any Woodmen water replacement plans, aquifer storage projects, and/or other future cases involving the reusable effluent attributable to water supplied to the Horton Property that Woodmen owns pursuant to Paragraphs 11.1.1(i)-(iii). Woodmen agrees to and shall not oppose any Horton replacement plans and/or other future cases involving Horton's water rights except to the extent that Horton risks causing material injury to Woodmen's water rights, infrastructure, or ability to serve Woodmen customers. Each Party shall confer and attempt to resolve issues in good faith before opposing any water rights proceeding in which the other Party is an applicant or project participant, whether solely or in conjunction with other parties.

11.1.3 <u>Exempt Wells Subject to Woodmen's Approval</u>. Any proposed water service within the Horton Property utilizing an exempt well is subject to review and approval by Woodmen.

11.1.4 <u>Water Quality</u>. The Parties acknowledge that the quality of wastewater delivered into the Plant and the Expansion from the Horton Property may affect Woodmen's ability to comply with governmental approvals associated with the Plant and the Expansion, including discharge permits, and may affect Woodmen's and other water providers' ability to claim return flow credit for reusable effluent. The Parties therefore agree to the following with respect to the total dissolved solids ("TDS") concentration in the wastewater delivered from the Horton Property into Woodmen's sewer system:

(i) Once the regional Lift Station constructed pursuant to Paragraph 9.3 above ("Horton Lift Station") is in operation and receiving wastewater from at least 250 SFEs ("Threshold Level"), Woodmen will sample, at Woodmen's sole cost and expense, the TDS concentration in the wastewater at the Horton Lift Station once each month. Once Woodmen has taken a full year's worth of TDS samples at the Horton Lift Station, during the sampling period extending from November through October (the "Sampling Period") beginning after the Threshold Level is met, Woodmen shall calculate prior to the end of the calendar year the annual average of the TDS concentration in the wastewater at the Horton Lift Station for that Sampling Period, which will be considered representative of the TDS concentrations in the wastewater discharged from the Horton Property ("Horton TDS Concentration").

(1) Woodmen also will sample once each month during the initial Sampling Period the TDS concentration in the wastewater at its existing Falcon Lift Station and calculate prior to the end of the calendar year an annual average of the TDS concentration, which will be considered representative of the TDS concentrations in wastewater discharged from the areas delivering wastewater into the Falcon Lift Station ("Woodmen TDS Concentration"). In the event Woodmen ceases use of the Falcon Lift Station in the future, or if it constructs an additional lift station to serve additional properties outside of the Horton Property, Woodmen will change and/or add to its sampling location(s) any new lift station(s), recalculate the Woodmen TDS Concentration, and notify Horton accordingly. If Woodmen samples at multiple locations, it will develop a flow-weighted mean TDS concentration as the Woodmen TDS Concentration. The Woodmen TDS Concentration, once established after the initial Sampling Period, shall not be subject to change except to the extent Woodmen ceases use of the Falcon Lift Station or constructs an additional lift station to serve additional properties outside of the Horton Property.

(2) Woodmen will maintain all sampling data for at least five (5) years and annually notify Horton in writing of the prior Sampling Period's data and the calculated Horton TDS Concentration and Woodmen TDS Concentration. Woodmen will provide any sampling data to Horton at Horton's request.

(3) Beginning in the January following the first Sampling Period in which Woodmen has calculated the Horton TDS Concentration and the Woodmen TDS Concentration, and for each successive calendar year, Woodmen may assess all Customers discharging to the Horton Lift Station a monthly surcharge for the succeeding calendar year following the Sampling Period to offset the costs associated with excess treatment, risk of noncompliance, risk of jeopardizing use of wastewater effluent for water rights purposes, and related administrative and legal costs ("TDS Surcharge"), on the following terms:

a. For every 30 mg/l in excess of 30 mg/l that the Horton TDS Concentration exceeds the Woodmen TDS Concentration, the TDS Surcharge will be $1.20/month per SFE, assessed to each customer within the Horton Property, for the first year in which said TDS concentrations are calculated and compared. The amount of the surcharge will be increased, but not decreased, thereafter annually based on the CPI. Any applicable TDS

Surcharge will be assessed monthly throughout the year after the determination and will be adjusted based on subsequent annual recalculations of the Horton TDS Concentration. For example, if the Horton TDS Concentration exceeds the Woodmen TDS Concentration by 61 mg/l during the initial Sampling Period extending from November, 2026 through October, 2027, each Customer discharging to the Horton Lift Station in calendar year 2028 will be assessed a TDS Surcharge of $2.40/month per SFE. Woodmen will continue its monthly TDS sampling during the November, 2027–October, 2028 Sampling Period and will recalculate the Horton TDS Concentration for that Sampling Period and compare it to the Woodmen TDS Concentration to determine the TDS Surcharge, if any, to be assessed during calendar year 2029.

b. Woodmen may not impose any TDS Surcharge until the Expansion is complete, in operation, and its discharge permit contains a TDS limit. In the event the Horton TDS Concentration is less than the Woodmen TDS Concentration, Woodmen is not obligated to impose a TDS Surcharge on any of its customers outside of the Horton Property.

c. As a condition of allowing any other properties to connect to the Horton Lift Station, Woodmen shall require the sampling of TDS from the wastewater stream discharged from such other properties so that their TDS concentrations can be distinguished from the Horton TDS Concentration, or Woodmen shall waive the TDS Surcharge for the Horton Property until the sampling for such other properties can be accomplished. Woodmen shall not impose a TDS Surcharge on Customers on account of TDS concentrations from customers outside the Horton Property that discharge into the Horton Lift Station.

(ii) Customers are prohibited from utilizing ion exchange, water softener systems, or any other in-home water treatment system that discharges concentrated brine wastes into Woodmen's sanitary sewer system; provided, however, that Horton shall not be liable to Woodmen for any damage or costs arising from any Customers' failure to comply with this Paragraph except to the extent caused by Horton.

(iii) Customers are subject to the Woodmen Regulations, as may be amended, including but not limited to Woodmen's Pretreatment Regulations for all non-residential customers, sewer use resolutions, and any restrictions or prohibitions otherwise approved by Woodmen.

12. **Restrictive Covenants**. The terms of Paragraphs 10.1 and 11.1.3–11.1.4 shall burden, attach to and, run with the Horton Property and shall be binding upon Horton, its successors and assigns, and any other persons or entities which may acquire an ownership or leasehold interest in all or any portion of them and shall inure to the benefit of Woodmen. At Horton's closing of the Horton Property, Horton shall promptly execute and deliver to Woodmen the Restrictive Covenant Agreement attached hereto as **Exhibit H**, with respect to each of the properties, which Woodmen shall then promptly execute and record in the real property records of El Paso County, Colorado. In the event Horton's purchase of the Horton Property is subject to a deed(s) of trust, Horton shall provide the lender's subordination of its deed(s) of trust to be recorded with the Restrictive Covenant Agreement against each.

13. **Representations and Warranties**.

13.1 Representations and Warranties by Woodmen. Woodmen represents and warrants as follows:

13.1.1 Woodmen is a quasi-municipal corporation and political subdivision of the State of Colorado formed pursuant to Title 32 of the Colorado Revised Statutes and has the power to enter into and has taken all actions to date required to authorize this Agreement and to carry out its obligations.

13.1.2 To the knowledge of Woodmen, Woodmen knows of no litigation, proceeding, initiative, referendum, investigation or threat of any of the same contesting the powers of Woodmen or its officials with respect to this Agreement that has not been disclosed in writing to Horton.

13.1.3 To the knowledge of Woodmen, the execution and delivery of this Agreement and the documents required and the consummation of the transactions contemplated by this Agreement will not (i) conflict with or contravene any law, order, rule or regulation applicable to Woodmen or to its governing documents; (ii) result in the breach of any of the terms or provisions or constitute a default under any agreement or other instrument to which Woodmen is a Party or by which it may be bound or affected; or (iii) permit any Party to terminate any such agreement or instruments or to accelerate the maturity of any indebtedness or other obligation of Woodmen.

13.1.4 This Agreement constitutes a valid and binding obligation of Woodmen, enforceable according to its terms, except to the extent limited by bankruptcy, insolvency and other laws of general application affecting creditors' rights and by equitable principles, whether considered at law or in equity.

13.1.5 Reference to Woodmen's "knowledge" and similar phrases means the current, actual (as opposed to constructive or imputed) knowledge of the Board of Directors of Woodmen, Wally Eaves, and Carter Bullion, without any duty or investigation or inquiry. The fact that reference is made herein to Woodmen's Board of Directors of Woodmen, Wally Eaves, and Carter Bullion shall not render them personally liable in any manner whatsoever under this Agreement, including, without limitation, liability for any breach of the representations or warranties in this Paragraph 13.

13.2 Representations and Warranties by Horton. Horton represents and warrants as follows:

13.2.1 Horton is a Delaware corporation in good standing and authorized to do business in the State of Colorado and has the power and the authority to enter into and perform in a timely manner its obligations under this Agreement.

13.2.2 The execution and delivery of this Agreement has been duly and validly authorized by all necessary action on its part to make this Agreement valid and binding upon Horton.

13.2.3 To the knowledge of Horton, the execution and delivery of this Agreement will not (i) conflict with or contravene any law, order, rule or regulation applicable to

Horton or to Horton's governing documents; (ii) result in the breach of any of the terms or provisions or constitute a default under any agreement or other instrument to which Horton is a Party or by which it may be bound or affected; or (iii) permit any Party to terminate any such agreement or instruments or to accelerate the maturity of any indebtedness or other obligation of Horton.

13.2.4 To the knowledge of Horton, there is no litigation, proceeding, initiative, referendum, or investigation or threat or any of the same contesting the powers of Horton or any of its principals or officials with respect to this Agreement that has not been disclosed in writing to Woodmen.

13.2.5 This Agreement constitutes a valid and binding obligation of Horton, enforceable according to its terms, except to the extent limited by bankruptcy, insolvency and other laws of general application affecting creditors' rights and by equitable principles, whether considered at law or in equity.

13.2.6 Reference to Horton's "knowledge" and similar phrases means the current, actual (as opposed to constructive or imputed) knowledge of Bill Carlisle without any duty of investigation or inquiry. The fact that reference is made herein to Mr. Carlisle shall not render him personally liable in any manner whatsoever under this Agreement, including, without limitation, liability for any breach of the representations or warranties in this Paragraph 13.

14. Notices. Any notice or demand under this Agreement shall be in writing and shall be hand delivered, sent by a nationally recognized overnight delivery service, sent by registered or certified mail, postage prepaid, return receipt requested, or sent electronically, to the following address:

TO WOODMEN:

Woodmen Hills Metropolitan District
8046 Eastonville Road
Falcon, CO 80831
Attn: Wally Eaves, Water and Wastewater Enterprise Director
Email: wallyeaves@whmd.org

with copy to:

Brownstein Hyatt Farber Schreck, LLP
410 17th Street, Suite 2200
Denver, CO 80202-4432
Attn: Wayne Forman and Michael Smith
Email: wforman@bhfs.com; msmith@bhfs.com

TO HORTON:

Melody Homes, Inc.
9555 S. Kingston Court
Englewood, CO 80112-5943
Attn: Bill Carlisle
Email: wmcarlisle@drhorton.com

with copy to:

Davis & Ceriani, P.C.
1600 Stout Street, Suite 1710
Denver, CO 80202
Attn: Nicholas Dooher and John Baker
Email: ndooher@davisandceriani.com; jbaker@davisandceriani.com

and:

Melody Homes, Inc.
9555 S. Kingston Court
Englewood, CO 80112-5943
Attn: Robert Coltin, Regional Counsel
Email: rcoltin@drhorton.com

Either Party may change its address by written notice to the other provided for above. Notices shall be effective (i) the next day following the date sent by an established express delivery service which maintains delivery records requiring a signed receipt, (ii) upon receipt by the addressee of a hand delivery, (iii) three days following the date of mailing via certified or registered mail, postage prepaid, return receipt requested, or (iv) the date upon which the notice has been sent electronically.

15. **Default and Remedies**. Except as otherwise provided in this Agreement, including Horton's Failure to Pay under Paragraph 7.2.2 and deliver Letters of Credit under Paragraph 7.3, in the event of a breach or default of this Agreement by any Party, the non-defaulting party shall deliver written notice of such default (including reasonable detail of the nature of such default), and the defaulting party shall be afforded fifteen (15) days after written notice of such default to cure the same; provided, however, that if the default or breach is non-monetary and cannot reasonably be cured within such period, the non-defaulting party shall have fifteen (15) days to commence the cure thereof and diligently pursue the same thereafter. In the event of any uncured default (or the defaulting parties failure to commence the cure thereof subject to the preceding sentence), the non-defaulting Party shall be entitled to recover its respective damages (excluding any consequential, special or punitive damages) incurred as a result of such default and shall have full power and authority to (i) enforce compliance with this Agreement, subject to the negotiation provisions below, in any manner provided for by law or in equity, including, but not limited to, (a) filing an action for such damages, (b) filing an action for injunctive relief, whether to enjoin any

violation or to specifically enforce the provisions of this Agreement, or (ii) terminate this Agreement by written notice to the defaulting Party.

15.1 Negotiation Before Litigation. The Parties shall attempt in good faith to resolve any dispute arising out of or relating to this Agreement promptly by negotiation. Any Party may give the other party written notice of any dispute not resolved in the normal course of business. Within twenty-one (21) days after delivery of the notice, the receiving Party shall submit to the other a written response. The notice and response shall include with reasonable particularity a statement of each Party's position and a summary of arguments supporting that position. Within thirty-five (35) days after delivery of the notice, the Parties shall meet at a mutually-acceptable time and place. Unless otherwise agreed in writing by the negotiating Parties, the above-described negotiation shall end at the close of the first meeting described above ("First Meeting"). Such closure shall not preclude continuing or later negotiations, if desired. All offers, promises, conduct and statements, whether oral or written, made in the course of the negotiation by any of the Parties, their agents, employees, experts, and attorneys are confidential, privileged, and inadmissible for any purpose, including impeachment, in any legal proceeding involving the Parties, provided that evidence that is otherwise admissible or discoverable shall not be rendered inadmissible or non-discoverable as a result of its use in the negotiation. At no time prior to the First Meeting shall either side initiate litigation related to this Agreement except to pursue a provisional remedy that is authorized by law or by agreement of the Parties and except if a Party refuses to engage in negotiation. All applicable statutes of limitation and defenses based upon the passage of time shall be tolled while the procedures in this Paragraph are pending and for twenty-one (21) calendar days thereafter. The Parties will take such action, if any, required to effectuate such tolling.

16. **Attorneys' Fees and Costs**. If any legal action or other proceeding is brought for the enforcement of this Agreement, or because of an alleged dispute, breach, default, or misrepresentation in connection with any of the provisions of this Agreement, the successful or prevailing Party shall be entitled to recover reasonable attorneys' fees, consultants' fees, and other costs incurred in that action or proceeding, in addition to any other relief to which it may be entitled; provided, however, the Parties agree to and hereby waive and release any claims for special, consequential, or punitive damages.

17. **Venue, Governing Law, and Waiver of Jury Trial**. Venue for any and all legal actions regarding this Agreement shall lie in the District Court in and for the County of El Paso, State of Colorado, or if federal court, then in the Federal District Court in and for Colorado in Denver, Colorado. This Agreement and the rights and obligations of the Parties shall be governed by the laws of the State of Colorado. EACH PARTY HEREBY IRREVOCABLY AND UNCONDITIONALLY: (A) CONSENTS AND SUBMITS TO THE EXCLUSIVE JURISDICTION OF THE AFOREMENTIONED COURTS; (B) WAIVES ANY OBJECTION TO THAT CHOICE OF FORUM BASED ON VENUE OR TO THE EFFECT THAT THE FORUM IS NOT CONVENIENT; AND (C) WAIVES ANY RIGHT TO TRIAL BY JURY.

18. **Insurance**.

18.1 Both Parties agree to acquire and maintain throughout the life of this Agreement, statutory workers' compensation insurance coverage, comprehensive general liability insurance coverage and automobile liability insurance coverage, in the minimum amounts set forth below.

18.1.1 Workers compensation insurance: in accordance with applicable law, including employers' liability.

18.1.2 Comprehensive general liability insurance: in the amount of $1,000,000.00 combined single limit bodily injury and property damage, each occurrence; and $2,000,000.00 general aggregate. Coverage shall include all major divisions of coverage and be on a comprehensive basis including premises operations; personal injury liability without employment exclusion; blanket contractual; broad form property damages, including completed operations; medical payments; products and completed operations; independent contractors coverage; and contractors limited pollution coverage.

18.1.3 Automobile liability insurance: in the amount of $1,000,000.00 combined single limit bodily injury and property damage, each accident covering any auto.

18.2 Additional Insured. Woodmen shall be named an additional insured under Horton's insurance policies.

18.3 Subcontractors Insured. If the Parties contracts any portion(s) of the work described herein, such contractor shall be required to furnish certificates evidencing statutory workers' compensation insurance and comprehensive general liability insurance coverage in the same minimum amounts. If the coverage required under this paragraph expires during the term of this Agreement, the Parties and/or the contractor shall provide replacement certificate(s) evidencing the continuation of the required policies.

19. **Relationship of Parties**. Nothing contained herein shall be construed or interpreted as (a) creating a joint venture, partnership or other similar relationship between the Parties or any of them; (b) entitling any person or entity not a Party to this Agreement to any benefits of this Agreement; (c) appointing one of the Parties as the agent of the other Party or authorizing one of the Parties to enter into contracts in the name of the other Party except as permitted by this Agreement; or (d) creating, establishing or imposing a fiduciary duty owed by a Party to the other Party hereunder or in any way creating a fiduciary relationship between the Parties.

20. **No Third-Party Beneficiaries**. No customer or other person or entity other than the Parties shall be deemed to be a third-party beneficiary under this Agreement, and nothing in this Agreement, express or implied, is intended to, and shall not be deemed to, confer upon any customer or other person or entity, other than the Parties and their respective successors and assigns, any rights, remedies, obligations or liabilities under or by reason of this Agreement. It is the express intention of the Parties that any person or entity other than the Parties that may receive services or benefits under this Agreement shall be deemed to be an incidental beneficiary only.

21. **Headings and Titles**. Paragraph headings and titles contained in this Agreement are intended for convenience and reference only and are not intended to define, limit, or describe the scope or intent of any provision of this Agreement.

22. **Assignment and Associated Limitations.**

22.1 Except as provided herein, Horton shall not assign, sell or transfer its rights and obligations under this Agreement without Woodmen's prior written consent, which may be withheld or conditioned in Woodmen's sole discretion.

22.2 Without Woodmen's prior written consent, Horton may assign the entirety of its rights and obligations under this Agreement to a single parent, subsidiary, or affiliate of Horton, or its single parent or any entity which controls, is controlled by, or is under common control with Horton.

22.3 Except as provided in Paragraph 22.2, any assignment, sale, or transfer of Horton's rights and obligations under this Agreement may only be made to an entity to which Horton assigns its rights to purchase all of the Horton Property, provided that the assignee agrees in writing to assume Horton's obligations hereunder with respect to the entire Horton Property, and provided that, consistent with Paragraph 22.1, Woodmen provides prior written consent, which may be withheld or conditioned in Woodmen's sole discretion.

22.4 In the event Horton assigns its interest in this Agreement with respect to the Horton Property:

22.4.1 Neither Horton nor its assigns may exercise the right to terminate this Agreement, in whole or in party, as provided in preceding Paragraph 7.5.1. On the contrary, the failure of Horton or its assigns to timely fund any Phase or deliver a required Letter of Credit shall constitute a default of this Agreement under Paragraphs 7.2.2 and 15; and.

22.4.2 In the event Horton or its assigns defaults under this Agreement, Woodmen, in addition to the remedies available under Paragraph 15, shall be entitled to maintain this Agreement in full force and effect, with Woodmen assuming the defaulting party's portion of Horton's Allocable Share without waiving its right to hold the defaulting party liable for damages hereunder. In the alternative, Woodmen may deem this Agreement terminated as to all parties, which decision shall be communicated to Horton's assignee(s) within thirty (30) days. In either case, the defaulting party shall be liable to Woodmen for all damages related to such default, including but not limited to payment to Woodmen of Woodmen's Reliance Costs up to the date of the default.

22.5 From and after assignment and assumption as provided above, Horton shall be relieved from all obligations assumed thereunder.

23. **Miscellaneous Provisions**.

23.1 This Agreement shall be binding on the Parties and their respective successors and assigns.

23.2 The above and foregoing constitutes the entire agreement between the Parties pertaining to the subject matter of this Agreement and no additional or different oral representation, promise or agreement shall be binding upon any of the Parties hereto with respect to the subject matter of this Agreement.

23.3 No Party shall be excused from complying with any provision of this Agreement by the failure of the other Party to insist upon or to seek compliance. No assent, expressed or implied, to any failure by a Party to comply with a provision of this Agreement shall be deemed or taken to be a waiver of any other failure to comply by said Party. No extension of time for the performance of any obligation or act will be deemed an extension of time for the performance of any other obligation or act.

23.4 Nothing in this Agreement shall be construed as a waiver of the notice requirements, defenses, immunities and limitations the Parties may have under the Colorado Governmental Immunity Act, C.R.S. § 24-10-101, *et seq.*, or to any other defenses, immunities, or limitations of liability available to the Parties against third parties by law.

23.5 Except as otherwise expressly provided in this Agreement, this Agreement may be amended, modified, or changed, in whole or in part, only by written agreement executed by both Parties in the same manner as this Agreement.

23.6 Time is of the essence of this Agreement.

23.7 Neither Party shall be liable for delay or failure to perform hereunder, despite best efforts to perform, if such delay or failure is the result of *force majeure*, and any time limit expressed in this Agreement shall be extended for the period of any delay resulting from any *force majeure*. Timely notices of the occurrence and the end of such delay shall be provided by the Party asserting *force majeure* to the other Party. "*Force majeure*" shall mean causes beyond the reasonable control of a Party such as, but not limited to, adverse weather conditions, acts of God or the public enemy, pandemic, strikes, work stoppages, unavailability of or delay in receiving labor or materials, faults by contractors, subcontractors, utility companies or third parties, fire or other casualty, or action of government authorities other than the Parties.

23.8 The Parties acknowledge that they both participated in the drafting of this Agreement and this Agreement shall not be construed against either one of them based on the interpretative rule that contracts should be construed against the drafter.

23.9 This Agreement may be executed in any number of counterparts, each of which when executed and delivered shall be an original, but all such counterparts shall constitute one and the same instrument.

IN WITNESS WHEREOF, the Parties have set their hands and seals, effective the day and year first above written.

(Remainder of Page Intentionally Blank)

WOODMEN HILLS METROPOLITAN DISTRICT, ACTING BY AND THROUGH ITS WASTEWATER ENTERPRISE

By: ________________________________

Name: ________________________________

Its: President

ATTEST:

____

MELODY HOMES, INC., A DELAWARE CORPORATION, D/B/A DR HORTON

By: ________________________________

Name: ________________________________

Its: ________________________________

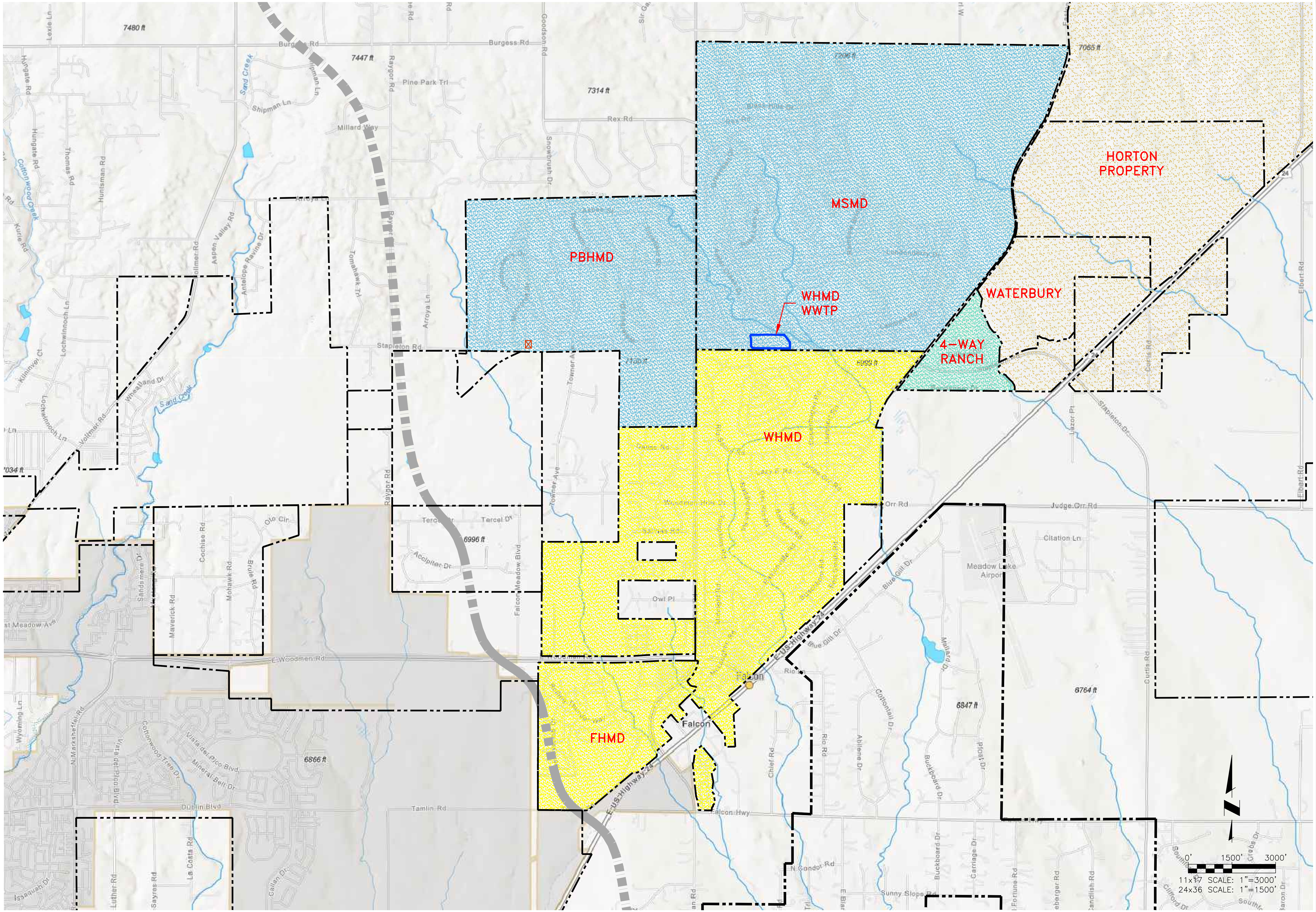
ATTEST:

____

EXHIBIT A
TO AGREEMENT FOR WASTEWATER TREATMENT PLANT EXPANSION AND EXTRATERRITORIAL WASTEWATER SERVICE

Woodmen Metropolitan District's Wastewater Service Area

(See Attached)



JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

DISCLAIMER: THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS. ANY ERRORS OR OMISSIONS SHALL BE REPORTED TO JDS-HYDRO CONSULTANTS, INC. JDS-HYDRO ASSUMES NO LIABILITY FOR UNAUTHORIZED CHANGES AND/OR REVISIONS MADE TO PLANS.

EXHIBIT A

EXISTING SERVICE AREA

EXHIBIT

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
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3				
4				
5				
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7				

Project No.: 112.122
Date: 12/01/22
Design: RMM
Drawn: RMM
Check: JPM

SHEET A OF

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2022/12/01 1:24 PM By: Jeffrey Bray

EXHIBIT B
TO AGREEMENT FOR WASTEWATER TREATMENT PLANT EXPANSION AND EXTRATERRITORIAL WASTEWATER SERVICE

DR Horton Property

(See Attached)

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

EXHIBIT B

PARCEL OUTLINE

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
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3				
4				
5				
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7				

Project No.: 112.122
Date: 12/01/22
Design: JLB
Drawn: JLB
Check: JPM

B
SHEET OF

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2022/12/01 1:26 PM By: Jeffrey Bray

EXHIBIT C
TO AGREEMENT FOR WASTEWATER TREATMENT PLANT EXPANSION AND EXTRATERRITORIAL WASTEWATER SERVICE

Woodmen Metropolitan District's Wastewater Treatment Plant Expansion - Technological Upgrades

(See Attached)

ACTUAL IMPROVEMENTS REQUIRED FOR THE EXPANSION AND UPGRADE OF THE WOODMEN HILLS WASTEWATER TREATMENT PLANT MAY VARY SOMEWHAT FROM THOSE CONTEMPLATED HEREIN DUE TO FINAL REGULATORY REQUIREMENTS, BUT AS CONCEIVED WITHIN THIS AGREEMENT THOSE IMPROVEMENTS ARE EXPECTED TO BE GENERALLY OUTLINED AS FOLLOWS.

NEW EXPANDED HEADWORKS INCLUDES;

- COARSE SCREENING
- FINE SCREENING
- GRIT REMOVAL
- LIFT PUMPING

CHANGES TO MAIN BASINS OR BIO-PLANT INCLUDES;

- CONVERSION TO MEMBRANE BIO-REACTOR MODE IN MAIN BASIN AREA
- ADDITIONAL CHEMICAL FEED SYSTEMS APPLIED GENERALLY TO THE MAIN BASIN AREA
- ADDITIONAL SLUDGE STORAGE AND HANDLING
- DEWATERING

CHANGES WITHIN THE EXISTING SUPERSTRUCTURE ENCLOSURE INCLUDES;

- MODIFICATION TO CLARIFIERS AND EQ
- REVERSE OSMOSIS AND CIP SYSTEMS
- DEWATERING
- NEW UV DISINFECTION

OFFSITE IMPROVEMENTS INCLUDES;

- BRINE LINE
- BRINE DISPOSAL

JDS-HYDRO a Division of RESPEC
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

EXHIBIT C

CAPACITY AND TECHNOLOGICAL UPGRADES

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
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EXHIBIT

Project No.: 112.122
Date: 12/08/22
Design: JPG
Drawn: AMY
Check: JPG

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SHEET 1 OF 1

EXHIBIT D
TO AGREEMENT FOR WASTEWATER TREATMENT PLANT EXPANSION AND EXTRATERRITORIAL WASTEWATER SERVICE

Woodmen Metropolitan District's Wastewater Treatment Plant Expansion – Current Estimate of Total Cost

(See Attached)

Exhibit D-1
Summary of Cost Estimate

Cost Estimate Summary

Project:	***Woodmen Hills Plant Expansion***
Owner:	***Woodmen Hills Metro***
Engineer:	***JDS-Hydro RESPEC***
Component:	***Current Estimated Cost Summary***
Contractor:	

Category	Cost
Headworks	$4,652,870
Bio-Plant Upgrades	$11,797,525
Reverse Osmosis System	$9,878,325
Disinfection	$1,845,145
Site and General Improvements	$790,500
Subtotal	**$28,964,365**
Contingency 15%	$4,344,654.75
Subtotal	$33,309,019.75
Soft Costs 14%	$4,663,262.77
Current Estimated Costs	**$37,972,282.52**

D-2 Headworks Estimate
D-3 Bio Plant Estimate
D-4 R-O System Estimate
D-5 Disinfection Estimate
D-6 Site and General Estimate

Exhibit D-2
Summary of Cost Estimate

Cost Estimate-- **Preliminary Class 4**

Project: ***Woodmen Hills Plant Expansion***
Owner: ***Woodmen Hills Metro***
Engineer: ***JDS-Hydro RESPEC***
Component: ***Headworks Systems***
Contractor:

Item #	Item Description	Quantity	Unit	Unit Cost	Amount
Coarse Screening (2)					
1	Move New Existing Screen/Compactor--6 mil	1	LS	$43,000.00	$43,000
2	Add Second New Screen --6 mil	1	LS	$373,500.00	$373,500
3	Add new Washer Compactor	1	LS	$170,570.00	$170,570
4	Channels (Concrete)	100	CY	$ 1,200.00	$120,000
5	Electrical/SCADA	1	LS	$51,000.00	$51,000
6	Unused	0	LS	$0.00	$0
7	Unused	0	LS	$0.00	$0
8	Unused	0	SF	$0.00	$0
Coarse Screening Sub total					**$758,070**
Fine Screening Single					
1	Fine Drum Screen	1	EA	$891,500.00	$891,500
2	Channels	1	LS	$393,500.00	$393,500
3	Washing/Receiving	1	EA	$272,300.00	$272,300
4	Electrical SCADA	1	LS	$83,000.00	$83,000
5	Unused	0	EA	$0.00	$0
6	Unused	0	EA	$0.00	$0
7	Unused	0	EA	$0.00	$0
Fine Screening Subtotal					**$1,640,300**
Grit Removal					
1	Pista Grit--Single Channel	1	EA	$296,000.00	$296,000
2	Main Grit Structure (Concrete)	410	LS	$1,200.00	$492,000
3	Classifier/Receiving	1	EA	$273,000.00	$273,000
4	Electrical SCADA	1	LS	$67,000.00	$67,000
5	Unused	0	EA	$0.00	$0
6	Unused	0	EA	$0.00	$0
7	Unused	0	EA	$0.00	$0
Grit Removal Subtotal					**$1,128,000**
Lift Station					
1	Pumping Units W VFDs	3	EA	$67,000.00	$201,000
2	Suction Header	1	LS	$19,000.00	$19,000
3	Discharge Header	1	LS	$46,200.00	$46,200
4	Wet Well (Concrete)	125	EA	$1,200.00	$150,000
5	Electrical SCADA	1	LS	$92,000.00	$92,000
6	Unused	0	EA	$0.00	$0
7	Unused	0	EA	$0.00	$0
Lift Station Subtotal					**$508,200**
Superstructure Site					
1	Site Improvments--grading-finish	1	LS	$25,000.00	$25,000
2	Structure (40 X 25)	1,000	LS	$250.00	$250,000
3	Additional Concrete	45	LS	$1,200.00	$54,000
4	HVAC	1	EA	$187,300.00	$187,300
5	Electrical SCADA	1	LS	$102,000.00	$102,000
6	Unused	0	EA	$0.00	$0
7	Unused	0	EA	$0.00	$0
Superstructure Subtotal					**$618,300**
Headworks Total					**$4,652,870**

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Exhibit D-3
Summory of Cost Estimate

	Cost Estimate--	**Preliminary Class 4**
Project:	***Woodmen Hills Plant Expansion***	
Owner:	***Woodmen Hills Metro***	
Engineer:	***JDS-Hydro RESPEC***	
Component:	***Bio-Plant Upgrade Systems***	
Contractor:		

Item #	Item Description	Quantity	Unit	Unit Cost	Amount
MBR Equipment Upgrades					
1	Membranes (Each Side)	2	LS	$913,000.00	$1,826,000
2	Suction Pumping System	1	LS	$402,100.00	$402,100
3	Piping Reconfiguration	1	LS	$382,000.00	$382,000
4	Demo RAS Pumping	1	LS	$150,000.00	$150,000
5	Air Systems	1	LS	$378,570.00	$378,570
6	Electrical and Controls	1	LS	$ 462,000.00	$462,000
7	Miscellaneous	1	LS	$200,000.00	$200,000
8	Unused	0	SF	$0.00	$0
MBR Upgrade Equipment Sub total					**$3,800,670**
Aeration Basin Modifications					
1	Demo --Cleanup Basins	3	EA	$100,000.00	$300,000
2	Concrete Walls--Basin	160	CY	$1,200.00	$192,000
3	Modify Aeration System Water Side	1	LS	$1,112,300.00	$1,112,300
4	Modify Air Piping Valving	1	LS	$493,000.00	$493,000
5	Electrical and Controls	1	LS	$342,050.00	$342,050
6	Unused	1	EA	$0.00	$0
7	Unused	0	EA	$0.00	$0
7	Unused	0	EA	$0.00	$0
Aeration Basin Modifications Subtotal					**$2,439,350**
Chem Feed Systems					
1	Alum Storage Feed	1	LS	$383,500.00	$383,500
2	Carbon Source Storage and Feed	1	LS	$574,600.00	$574,600
3	Misc Chemical Lines	1	LS	$172,500.00	$172,500
4	Electrical and Controls	1	LS	$147,555.00	$147,555
5	Unused	1	LS	$0.00	$0
6	Unused	0	EA	$0.00	$0
7	Unused	0	EA	$0.00	$0
Chem Feed Systems Subtotal					**$1,278,155**
Dewatering Add One Unit					
1	Second Screw Press	1	EA	$1,134,000.00	$1,134,000
2	Fitrate Capture Return	1	LS	$303,700.00	$303,700
3	Transfer Belts to existing	1	LS	$478,450.00	$478,450
4	Add second Feed Pump/Piping	1	EA	$253,000.00	$253,000
5	Equipment Relocation	1	LS	$237,000.00	$237,000
6	Electrical and Controls	1	LS	$93,200.00	$93,200
7	Unused	0	EA	$0.00	$0
7	Unused	0	EA	$0.00	$0
Dewatering Subtotal					**$2,499,350**
Additional Sludge Holding					
1	Excavation	1	LS	$223,000.00	$223,000
2	Concrete	810	CY	$1,200.00	$972,000
3	Aeration/Mixing	1	LS	$277,000.00	$277,000
4	Misc Metals	1	LS	$36,000.00	$36,000
5	Electrical SCADA	1	LS	$172,000.00	$172,000
6	Miscellaneous	1	EA	$100,000.00	$100,000
7	Unused	0	EA	$0.00	$0
7	Unused	0	EA	$0.00	$0
Additional Sludge Holding Subtotal					**$1,780,000**

Bio Plant Total **$11,797,525**

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Exhibit D-4
Summary of Cost Estimate

	Cost Estimate--	**Preliminary Class 4**
Project:	***Woodmen Hills Plant Expansion***	
Owner:	***Woodmen Hills Metro***	
Engineer:	***JDS-Hydro RESPEC***	
Component:	***R-O System***	
Contractor:		

Item #	Item Description	Quantity	Unit	Unit Cost	Amount
EQ Basin Mods And Clarifier					
1	Demo Clarifier 2/fill with revetment	1	LS	$273,000.00	$273,000
2	Demo Clarifier 1 Equipment	1	LS	$73,500.00	$73,500
3	New Concrete Dividers	150	CY	$1,200.00	$180,000
4	Piping Changes	1	LS	$ 150,000.00	$150,000
5	Electrical/SCADA	0	LS	$0.00	$0
6	Unused	0	LS	$0.00	$0
7	Unused	0	LS	$0.00	$0
8	Unused	0	SF	$0.00	$0
EQ Basin Mods And Clarifier Sub total					**$676,500**
R-O Feed Pumping					
1	Duplex/Standby Feed Station with VFDs	3	EA	$147,550.00	$442,650
2	Skid Mount System	1	LS	$185,000.00	$185,000
3	Piping	1	LS	$72,000.00	$72,000
4	Electrical SCADA	0	LS	$0.00	$0
5	Unused	0	EA	$0.00	$0
6	Unused	0	EA	$0.00	$0
7	Unused	0	EA	$0.00	$0
R-O Feed Pumping Subtotal					**$699,650**
Cartridge Filters					
1	Cartridge Units	2	EA	$113,000.00	$226,000
2	Piping	1	LS	$85,000.00	$85,000
3	Unused	0	EA	$0.00	$0
4	Unused	0	LS	$0.00	$0
5	Unused	0	EA	$0.00	$0
6	Unused	0	EA	$0.00	$0
7	Unused	0	EA	$0.00	$0
Cartridge Filters Subtotal					**$311,000**
R-O Membranes					
1	500 GPM Full R-O Membrane Skids	2	EA	$1,150,000.00	$2,300,000
2	Piping	1	LS	$42,000.00	$42,000
3	Unused	0	LS	$0.00	$0
4	Unused	0	EA	$0.00	$0
5	Unused	0	EA	$0.00	$0
7	Unused	0	EA	$0.00	$0
R-O Membranes Subtotal					**$2,342,000**
Chemical Feed --CIP Systems					
1	Three Chemical/Storage Feed Systems	3	LS	$75,700.00	$227,100
2	Piping	1	LS	$35,000.00	$35,000
3	Unused	0	LS	$0.00	$0
4	Unused	0	EA	$0.00	$0
5	Unused	0	EA	$0.00	$0
6	Unused	0	EA	$0.00	$0
Chemical Feed Systems Subtotal					**$262,100**
Brine Disposal					
1	Phase One Ponds Grading	1	LS	$891,000.00	$891,000
2	Liners	1	LS	$2,484,000.00	$2,484,000
2	Piping	1	LS	$1,380,000.00	$1,380,000
3	Distribution	1	LS	$125,000.00	$125,000
4	Fencing	1	LS	$126,000.00	$126,000
5	Unused	0	EA	$0.00	$0
6	Unused	0	EA	$0.00	$0
Brine Disposal Subtotal					**$5,006,000**
Electrical and SCADA					
1	EQ Basin and Clarifier	0	LS	$0.00	$0
2	RO Feed System	1	LS	$81,700.00	$81,700
2	Cartridge Filters	0	LS	$0.00	$0
3	RO Membranes	1	LS	$273,000.00	$273,000
4	Chemical Feed --CIP	1	LS	$226,375.00	$226,375
5	Brine Disposal	0	EA	$0.00	$0
6	Unused	0	EA	$0.00	$0
Electrical and SCADA Subtotal					**$581,075**
			Total R-O		**$9,878,325**

Exhibit D-5
Summary of Cost Estimate

Cost Estimate-- **Preliminary Class 4**

Project:	***Woodmen Hills Plant Expansion***
Owner:	***Woodmen Hills Metro***
Engineer:	***JDS-Hydro RESPEC***
Component:	***General Site Improvements***
Contractor:	

Item #	Item Description	Quantity	Unit	Unit Cost	Amount
Site Work					
1	Demo Existing Disinfection Building and Equipment	1	LS	$250,000.00	$250,000
2	Grading	1	LS	$150,000.00	$150,000
5	Unused	0	LS	$0.00	$0
6	Unused	0	SF	$0.00	$0
Site Work Sub total					**$400,000**
Ultraviolet System					
1	UV Equipment	4	EA	$167,500.00	$670,000
2	Flow Measurement	1	LS	$15,500.00	$15,500
3	Misc Metals/Covers	1	LS	$38,000.00	$38,000
4	Instrumention	1	LS	$53,200.00	$53,200
5	Sampling	1	EA	$17,900.00	$17,900
6	Unused	0	EA	$0.00	$0
7	Unused	0	EA	$0.00	$0
UV System Subtotal					**$794,600**
Electrical and Controls					
1	Electrical	1	LS	$113,000.00	$113,000
2	Controls/SCADA	1	LS	$37,500.00	$37,500
3	Unused	0	EA	$0.00	$0
4	Unused	0	EA	$0.00	$0
5	Unused	0	EA	$0.00	$0
Electrical and Controls Subtotal					**$150,500**
Structure					
1	Concrete Channels	150	CY	$1,200.00	$180,000
2	Wash Racks	1	LS	$42,000.00	$42,000
3	Plumbing and Return	1	LS	$29,745.00	$29,745
4	Unused	0	EA	$0.00	$0
5	Unused	0	EA	$0.00	$0
7	Unused	0	EA	$0.00	$0
Structure Subtotal					**$251,745**
Non-potable Systems					
1	Fill Pump	1	LS	$17,500.00	$17,500
2	2000 Gallon Storage	1	LS	$35,000.00	$35,000
3	Direct Feed Pumping System	1	LS	$78,000.00	$78,000
4	Piping	1	LS	$117,800.00	$117,800
5	Unused	0	EA	$0.00	$0
6	Unused	0	EA	$0.00	$0
Non-Pot Systems Subtotal					**$248,300**

$1,845,145

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Exhibit D-6
Summary of Cost Estimate

Cost Estimate-- **Preliminary Class 4**

Project: ***Woodmen Hills Plant Expansion***
Owner: ***Woodmen Hills Metro***
Engineer: ***JDS-Hydro RESPEC***
Componei ***Site and General Systems***
Contractor:

Item #	Item Description	Quantity	Unit	Unit Cost	Amount
General and Site Improvements					
1	Grading, Access, and Landscaping Improvements	1	LS	$450,000.00	$450,000
2	Laboratory Upgrades	1	LS	$110,000.00	$110,000
3	Central PLC and Telementry Upgrades	1	LS	$147,500.00	$147,500
3	Other Equipment-Instrumentation	1	LS	$83,000.00	$83,000
4	Unused	0	SF	$0.00	$0
Site and General Sub total					**$790,500**
	15% Contingency				$118,575
	Subtotal				$909,075
	14% Soft Costs				$127,271
	Total				**$1,036,346**

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EXHIBIT E
TO AGREEMENT FOR WASTEWATER TREATMENT PLANT EXPANSION AND EXTRATERRITORIAL WASTEWATER SERVICE

Woodmen Metropolitan District's Wastewater Treatment Plant Expansion – Total Cost Allocations

(See Attached)

Exhibit E-1
Summary of Cost Allocation

Comprehensive Summary Sheet
Allocation of Costs via Major Line Item Categories
WHMD and Grandview Allocation

Major Cost Category	WHMD	GMD	Total
Headworks	$4,332,065	$1,767,847	$6,099,913
Bio-Membrane Plant Conversion	$9,211,656	$6,254,900	$15,466,555
R-O System	$9,832,008	$3,118,477	$12,950,484
Disinfection	$1,520,977	$898,008	$2,418,985
	$24,896,706	**$12,039,231**	**$36,935,937**
	67.41%	32.59%	
Site/General Improvements	$698,550	$337,796	$1,036,346
Total	**$25,595,255**	**$12,377,027**	**$37,972,283**
	67.41%	**32.59%**	**100.00%**

Sheet E-2 Allocation Ratio Analysis
Sheet E-3 Headworks Allocation
E-4 Bio Plant Upgrades Allocation
E-5 R-O System Allocation
E-6 Disinfection System Allocation

Allocation of Site and General Improvements is allocatted on the overall cost allocation of all other improvements

Exhibit E-2
Summary of Cost Allocation

Allocation of Costs per Flow
WHMD and Grandview Allocation

Capacity		MGD
Woodmen Hills Metropolitan District (Existing Capacity)		1300000
Paint Brush Hills		
Falcon Highlands		
Meridian Service Metropolitan District		
4-Way Existing		
Total Plant Expansion Capacity		2500000
Horton Expansion SFE	3500	
Horton Expansion Flow	602000	602000
Net Woodmen Expansion Flow		598000
Net Woodmen Expansion SFE	3477	
Total Plant Capacity		**2500000**
Woodmen Ratio of Capacity Expansion		49.83%
Grandview Ratio of Capacity Expansion		50.17%
Woodmen Ratio of Regulatory Upgrades		75.92%
Grandview Ration of Regulatory Upgrades		24.08%

Exhibit E-3
Summary of Cost Allocotion

Comprehensive Summory Sheet
Allocation of Costs via Major Line Item Categories
WHMD ond Grondview Allocation

Heodworks Allocation

Item	Associated Cost 2.5 MGD	WHMD Ratio	WHMD Value	GMD Ratio	GMD Value	Allocation Basis
Coarse Screening	$ 758,070	0.49833	$ 377,772	0.50167	$ 380,298	**Capacity**
Fine Screening	$ 1,640,300	0.7592	$ 1,245,316	0.2408	$ 394,984	**Regulatory**
Grit Removal	$ 1,128,000	0.7592	$ 856,378	0.2408	$ 271,622	**Regulatory**
Lift Station	$ 508,200	0.7592	$ 385,825	0.2408	$ 122,375	**Regulatory**
Subtotal	$ 4,034,570		$ 2,865,290		$ 1,169,280	**Sub Total**
			71.02%		**28.98%**	
Superstructure/Site work	$ 618,300	**71.02%**	$439,107	**28.98%**	$179,193	
Subtotal	**$ 4,652,870**		**$3,304,398**		**$1,348,472**	
Contingency (15%)	$697,931		$495,660		$202,271	**Joint**
Subtotal	**$5,350,801**		**$3,800,057**		**$1,550,743**	
Soft Costs (14%)	$749,112		$532,008		$217,104	
Total	**$6,099,913**		**$4,332,065**		**$1,767,847**	**Total**

Regulatory

GMD	24.08%	
WHMD	75.92%	

Capacity

GMD	50.17%	
WHMD	49.83%	

Combined GMD	0.742466667	37.12%
Combined WHMD	1.257533333	62.88%
	2.000	

Exhibit E-4
Summary of Cost Allocation

Comprehensive Summary Sheet
Allocation of Costs via Major Line Item Categories
WHMD and Grandview Allocation

Bio-Plant Allocation

Item	2.5 MGD	WHMD Ratio	WHMD Value	GMD Ratio	GMD Value	Allocation Basis
MBR Equipment	$ 3,800,670	0.62877	$ 2,389,735	0.37123	$ 1,410,935	**Combined**
Aeration Basin Modifications	$ 2,439,350	0.62877	$ 1,533,782	0.37123	$ 905,568	**Combined**
Additional Sludge Basins	$ 1,780,000	0.49833	$ 887,033	0.50167	$ 892,967	**Capacity**
Chemical Feed Systems (Alum/Carbon)	$ 1,278,155	0.75920	$ 970,375	0.24080	$ 307,780	**Regulatory**
Dewatering	$ 2,499,350	0.49833	$ 1,245,509	0.50167	$ 1,253,841	**Capacity**
Subtotal	**$ 11,797,525**	**0.596**	**$ 7,026,435**	**0.404**	**$ 4,771,090**	
Contingency (15%)	$ 1,769,629		$ 1,053,965		$ 715,664	**Joint**
Subtotal	$ 13,567,154		$ 8,080,400		$ 5,486,754	
Soft Costs (14%)	$ 1,899,402		$ 1,131,256		$ 768,146	
Total	**$ 15,466,555**		**$ 9,211,656**		**$ 6,254,900**	**Total**

Regulatory		
GMD	24.08%	
WHMD	75.92%	
Capacity		
GMD	50.17%	
WHMD	49.83%	
Combined GMD	0.742466667	37.12%
Combined WHMD	1.257533333	62.88%
	2.000	

Summary of Cost Allocation

Comprehensive Summary Sheet
Allocation of Costs via Major Line Item Categories
WHMD and Grandview Allocation
Reverse Osmosis Summary

R-O Systems are entirely Regulatory Improvements

			WHMD		GMD	
Item	**2.5 MGD**	**Ratio**	**Value**	**Ratio**	**Value**	
EQ Basin Mods and clarifier Demo/Backfill	$ 676,500	0.7592	$ 513,599	0.2408	$ 162,901	
RO Feed Pumps	$ 699,650	0.7592	$ 531,174	0.2408	$ 168,476	
Cartridge Filters	$ 311,000	0.7592	$ 236,111	0.2408	$ 74,889	
RO Membrane Skids	$ 2,342,000	0.7592	$ 1,778,046	0.2408	$ 563,954	
Chemical Feed Systems	$ 262,100	0.7592	$ 198,986	0.2408	$ 63,114	
Brine Disposal	$ 5,006,000	0.7592	$ 3,800,555	0.2408	$ 1,205,445	
Electrical and Controls	$ 581,075	0.7592	$ 441,152	0.2408	$ 139,923	
Subtotal	$ 9,878,325		$ 7,499,624		$ 2,378,701	
Contigency 15%	$ 1,481,749		$ 1,124,944		$ 356,805	
Subtotal	$ 11,360,074		$ 8,624,568		$ 2,735,506	
Soft Costs 14%	$ 1,590,410		$ 1,207,440		$ 382,971	
Total	**$ 12,950,484.08**		**$9,832,008**		**$ 3,118,477**	

Regulatory

GMD	24.08%	
WHMD	75.92%	

Capacity

GMD	50.17%	
WHMD	49.83%	
Combined GMD	0.742466667	37.12%
Combined WHMD	1.257533333	62.88%
	2.000	

Exhibit E-6
Summary of Cost Allocotion

Comprehensive Summary Sheet
Allocotion of Costs via Major Line Item Cetegories
WHMD ond Grandview Allocotion

Disinfection System Improvements are entriely Combination Allocation

Disinfection System Allocotion

Item		Associated Cost 2.5 MGD	WHMD			GMD		
			Ratio		Value	Ratio		Value
Site Work		$400,000	0.6288	$	251,506.67	0.371	$	148,493.33
Equipment		$794,600	0.6288	$	499,617.99	0.371	$	294,982.01
Electrical and Controls		$150,500	0.6288	$	94,629.38	0.371	$	55,870.62
Structure		$251,745	0.6288	$	158,288.86	0.371	$	93,456.14
Non-pot system		$248,300	0.6288	$	156,122.76	0.371	$	92,177.24
Subtotal	$	1,845,145.00		$	1,160,165.67		$	684,979.33
Construction Contigency (15%)	$	276,772		$	174,025		$	102,747
Subtotal	$	2,121,917		$	1,334,191		$	787,726
Soft Costs (14%)	$	297,068		$	186,787		$	110,282
Total	**$**	**2,418,985.10**		**$**	**1,520,977.19**		**$**	**898,007.90**

<u>Regulatory</u>

GMD	24.08%	
WHMD	75.92%	

<u>Capacity</u>

GMD	50.17%	
WHMD	49.83%	
Combined GMD	0.742466667	37.12%
Combined WHMD	1.257533333	62.88%
	2.000	

EXHIBIT F
TO AGREEMENT FOR WASTEWATER TREATMENT PLANT EXPANSION AND EXTRATERRITORIAL WASTEWATER SERVICE

DR Horton Form Letter of Credit

(See Attached)

IRREVOCABLE STANDBY LETTER OF CREDIT

Issue Date: [___________________________]

Letter of Credit No. [____________________________]

Beneficiary:
Woodmen Hills Metropolitan District
8046 Eastonville Road
Peyton, CO 80831

Original Letter of Credit Delivered To:

Woodmen Hills Metropolitan District
8046 Eastonville Road
Peyton, CO 80831
Attention: Carter Bullion

Expiration Date: [_________________________________]

Ladies and Gentlemen:

We hereby issue this Irrevocable Standby Letter of Credit No. [_______________________________] (this "Letter of Credit") in your favor for the account of [__________________________________], a [________________________________] ("Applicant") up to an aggregate amount of US $[________________________] ([_____________________________________] and [___]/100 United States Dollars).

The purpose of this Letter of Credit is to secure the obligations of Applicant under that certain AGREEMENT FOR WASTEWATER TREATMENT PLANT EXPANSION AND EXTRATERRITORIAL WASTEWATER SERVICE, dated [____________________], by and between Applicant and Beneficiary.

You are hereby authorized to draw at sight by any (but not more than one) of the following methods: (1) upon presentation of the original Letter of Credit at our address set forth below; or (2) upon presentation of the original Letter of Credit by courier, Federal Express, UPS (or other similar nationally recognized overnight courier), or priority or first class United States mail to us at the address set forth below:

[_______________________]
[_______________________]
[_______________________]
[_______________________]
Attention: [____________________]

The undrawn portion of this Letter of Credit shall be available until 5:00 p.m. [_________________] Time on the Expiration Date (as extended, if applicable), upon presentation of:

1. Your drawing certificate, marked, "Drawn under Irrevocable Standby Letter of Credit No. [________________________]" and delivered to us as directed by this Letter of Credit;

2. A statement on your stationery addressed to [_________________________________] signed by your

purportedly authorized representative stating: “The undersigned is an authorized representative of Woodmen Hills Metropolitan District, and certifies that the following fact is true:”

a. “WOODMEN HILLS METROPOLITAN DISTRICT (“BENEFICIARY”) HAS SUBMITTED A DELINQUENT PAYMENT NOTICE TO [______________________________] (“APPLICANT”) IN ACCORDANCE WITH THE PROVISIONS OF THAT CERTAIN AGREEMENT FOR WASTEWATER TREATMENT PLANT EXPANSION AND EXTRATERRITORIAL WASTEWATER SERVICE, DATED [______________________________], BY AND BETWEEN APPLICANT AND BENEFICIARY (THE “AGREEMENT”) STATING THAT (I) APPLICANT HAS FAILED TO DELIVER A PROGRESS PAYMENT FOR HORTON’S ALLOCABLE SHARE (AS DEFINED IN THE AGREEMENT) DUE AND PAYABLE IN ACCORDANCE WITH THE PROVISIONS OF THE AGREEMENT, ON THE DATE UPON WHICH THE SAME WAS DUE AND PAYABLE UNDER THE AGREEMENT, (II) THE CURE PERIOD SPECIFIED IN THE AGREEMENT FOR SAID PROGRESS PAYMENT OF THE SAME HAS EXPIRED, AND (III) SUCH PAYMENT REMAINS UNPAID. THEREFORE, BENEFICIARY IS ENTITLED TO DRAW UNDER THE LETTER OF CREDIT AND DISBURSE THE PROCEEDS AS PROVIDED IN THE AGREEMENT.”

OR

b. “WOODMEN HILLS METROPOLITAN DISTRICT (“BENEFICIARY”) HAS RECEIVED A TERMINATION NOTICE FROM [______________________________] (“APPLICANT”) AND THE OBLIGATION OF APPLICANT TO PAY BENEFICIARY’S RELIANCE COSTS UNDER THAT CERTAIN AGREEMENT FOR WASTEWATER TREATMENT PLANT EXPANSION AND EXTRATERRITORIAL WASTEWATER SERVICE, DATED [______________________________], BY AND BETWEEN APPLICANT AND BENEFICIARY (THE “AGREEMENT”) SECURED BY THE LETTER OF CREDIT REMAINS OUTSTANDING.

OR

c. “WOODMEN HILLS METROPOLITAN DISTRICT (“BENEFICIARY”) HAS RECEIVED A NOTICE OF NON-EXTENSION FROM ISSUER AND (I) IT IS LESS THAN THIRTY (30) DAYS PRIOR TO THE SCHEDULED EXPIRATION DATE OF THE LETTER OF CREDIT, AS THE EXPIRATION DATE OF THE LETTER OF CREDIT MAY HAVE BEEN EXTENDED PURSUANT TO ITS TERMS, (II) THE OBLIGATIONS OF APPLICANT UNDER THAT CERTAIN AGREEMENT FOR WASTEWATER TREATMENT PLANT EXPANSION AND EXTRATERRITORIAL WASTEWATER SERVICE, DATED [______________________________], BY AND BETWEEN APPLICANT AND BENEFICIARY (THE “AGREEMENT”) SECURED BY THE LETTER OF CREDIT REMAIN OUTSTANDING, AND (III) APPLICANT HAS FAILED TO DELIVER TO BENEFICIARY EITHER (X) A REPLACEMENT LETTER OF CREDIT IN THE AMOUNT REQUIRED UNDER THE AGREEMENT, OR (Y) REPLACEMENT FUNDS (AS DEFINED IN AND REQUIRED BY THE AGREEMENT), WHICH FAILURE CONSTITUTES A DEFAULT UNDER THE AGREEMENT. THEREFORE,

BENEFICIARY IS ENTITLED TO DRAW UNDER THE LETTER OF CREDIT AND DISBURSE THE PROCEEDS AS PROVIDED IN THE AGREEMENT.”; and

3. The original of this Letter of Credit and each amendment to this Letter of Credit (except in the event of facsimile presentation).

If a conforming presentation is delivered to us on a business day on or before 10:00 a.m. [_____________] Time, we will satisfy the drawing request within three (3) businesses days of presentation. If the conforming presentation is received after 10 a.m. [_______________] Time, or on a day that is not a business day, we will satisfy the drawing request within three (3) business days of the next business day.

This Letter of Credit shall be deemed automatically extended, without amendment, for an additional period of one (1) year from the Expiration Date (or the extended Expiration Date then in effect, if applicable), unless not less than sixty (60) days prior to the Expiration Date (or the extended Expiration Date then in effect, if applicable), we notify you in writing, by registered mail, courier service, overnight delivery, or hand delivery, at the Beneficiary address above, that we elect not to extend this Letter of Credit.

Multiple, partial drawings are permitted and we warrant that we will honor each draft under this Letter of Credit, up to the undrawn portion of the face amount, upon your complying presentation to us on or prior to the Expiration Date (as extended, if applicable).

Except as otherwise expressly stated herein, this Letter of Credit is subject to the Uniform Customs and Practice for Documentary Credits, 2007 Revision, the International Chamber of Commerce Publication No. 600 (UCP600), and (except to the extent of any inconsistency with UCP600) shall be governed by Article 5 of the Uniform Commercial Code as in effect in the State of Colorado.

[ISSUER]

By: _________________________________

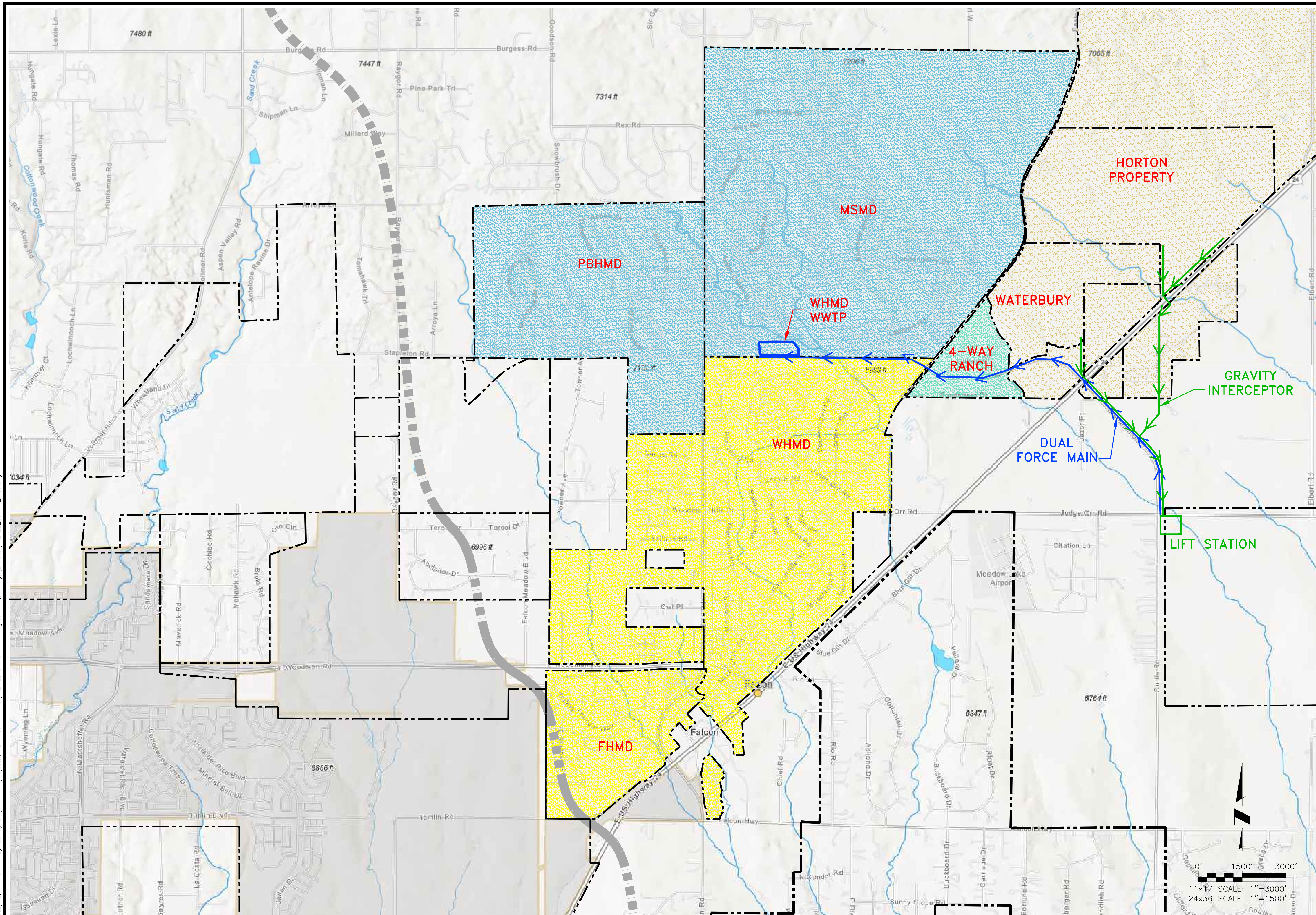
Its: _________________________________

24496730

EXHIBIT G
TO AGREEMENT FOR WASTEWATER TREATMENT PLANT EXPANSION AND EXTRATERRITORIAL WASTEWATER SERVICE

Estimated Locations of Regional Lift Station and Force Main

(See Attached)



JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

EXHIBIT G

MAJOR SEWER IMPROVEMENTS

EXHIBIT

REVISIONS

NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
4				
5				
6				
7				

Project No.: 112.122
Date: 12/01/22
Design: JLB
Drawn: JLB
Check: JPM

SHEET G OF

N:\Projects\112 Woodmen Hills\112.122 Grandview WW Agreement\Drawings\Exhibits\112122_Service_Area.dwg
2022/12/01 1:54 PM By: Jeffrey Bray

EXHIBIT H
TO AGREEMENT FOR WASTEWATER TREATMENT PLANT EXPANSION AND EXTRATERRITORIAL WASTEWATER SERVICE

Restrictive Covenant Agreement

(See Attached)

24963150

RESTRICTIVE COVENANT AGREEMENT

THIS RESTRICTIVE COVENANT AGREEMENT ("Agreement"), dated for reference purposes this _______ day of __________________, 202__, is made and entered into by and between WOODMEN HILLS METROPOLITAN DISTRICT, a quasi-municipal corporation and political subdivision of the state of Colorado, acting by and through its Wastewater Enterprise ("Woodmen"), and MELODY HOMES, INC., a Delaware corporation, D/B/A DR HORTON, its successors and assigns ("Horton"). Woodmen and Horton are sometimes referred to in this Agreement individually as a "Party" and jointly as the "Parties".

RECITALS

A. Woodmen is a quasi-municipal corporation and political subdivision of the state of Colorado formed pursuant to Title 32 of the Colorado Revised Statutes. Among other things, Woodmen provides sewer service within its service area, as well as the service areas of Paint Brush Hills Metropolitan District, Falcon Highlands Metropolitan District, and portions of the 4-Way Ranch Metropolitan District and Meridian Service Metropolitan District, all located in El Paso County, Colorado. To provide this service, Woodmen owns and operates a 1.3-million gallons per day ("MGD") wastewater treatment plant commonly known as the Woodmen Hills Regional Water Reclamation Facility (the "Plant").

B. Horton is a private developer of residential communities and is the fee title holder of that certain real property located in El Paso County, Colorado, legally described on **Exhibit 1** attached hereto (the "Horton Property").

C. The Parties determined that having Woodmen expand its wastewater service to include the Horton Property and other nearby properties likely to develop, and having the Parties jointly fund an expansion of Woodmen's wastewater treatment plant (the "Expansion") will benefit the Parties and future residents of Woodmen and the Horton Property and the Parties have therefore entered into an Agreement for Wastewater Treatment Plant Expansion and Extraterritorial Wastewater Service, effective ___________________, 2022 ("Extraterritorial Wastewater Service Agreement").

D. In connection with the Extraterritorial Wastewater Service Agreement, Horton has agreed to the imposition of certain covenants, conditions and restrictions associated with the Horton Property, as described in this Agreement.

AGREEMENT

NOW, THEREFORE, in consideration of the covenants contained herein and for other valuable consideration, the receipt and adequacy of which is hereby acknowledged, the Parties hereby agrees as follows:

1. **Recitals and Exhibits**. The Recitals above and all Exhibits referenced herein are incorporated into and made a part of this Agreement.

2. **Effective Date**. The "Effective Date" of this Agreement shall be the date the fully signed Agreement is recorded in the El Paso County Clerk & Recorder's Office.

3. **Definitions**

3.1 **CPI** means the Consumer Price Index for All Urban Consumers, All Items, for the Denver-Aurora-Lakewood area, as published by the U.S. Department of Labor, Bureau of Labor Statistics, or successor index should publication of the Index cease. Adjustments based on the CPI shall be equal to the percentage increase or decrease in the CPI issued for the calendar year in which such adjustment is to be made (or if the CPI for such year is not yet publicly available, the CPI for the most recent calendar year for which the CPI is publicly available) as compared to the CPI issued for the year in which the Effective Date occurred.

3.2 **Single-Family Residential Equivalent ("SFE")** means each single-family connection or connections equivalent to one single-family residence. Currently, one SFE is equal to: one "detached" single-family unit, which means a building or structure used or designed to be used as only one residential unit; each separate residential unit within an "attached" building, such as a duplex or paired lot; and each separate residential unit within a "multifamily" building, such as a townhome or apartment building.

3.3 **Woodmen Regulations** means Woodmen's Bylaws, Rules, and Regulations dated January 27, 2022, as they may be amended.

4. **Restrictive Covenants**.

4.1 Wastewater Service Fees. Except as otherwise provided herein, customers within the Horton Property receiving wastewater service from Woodmen ("Customers") shall pay the same wastewater service rates, fees, charges, surcharges, and assessments or other financial liabilities however termed required for Woodmen's wastewater services as Woodmen's in-district residents, as they are modified from time to time, in accordance with the Woodmen Regulations. Billing, collection and administration of service fees shall be performed by Woodmen, in accordance with the Woodmen Regulations.

4.2 Exempt Wells Subject to Woodmen's Approval. Any proposed water service within the Horton Property utilizing an exempt well is subject to review and approval by Woodmen.

4.3 Water Quality. The Parties acknowledge that the quality of wastewater delivered into the Plant and the Expansion from the Horton Property may affect Woodmen's ability to comply with governmental approvals associated with the Plant and Expansion, including discharge permits, and may affect Woodmen's and other water providers' ability to claim return flow credit for reusable effluent. The Parties therefore agree to the following with respect to the total dissolved solids ("TDS") concentration in the wastewater delivered from the Horton Property into Woodmen's sewer system:

(i) As set forth in Paragraph 9.3 of the Extraterritorial Wastewater Service Agreement, the Parties anticipate that a regional Lift Station and Force Main will be necessary to serve the Horton Property pursuant to said agreement, and that the Force Main will be a double barrel pipeline with each pipeline sized at no less than eight (8) inches in diameter. Once said regional Lift Station ("Horton Lift Station") is in operation and receiving wastewater from at least 250 SFEs ("Threshold Level"), Woodmen will sample, at Woodmen's sole cost and expense, the TDS concentration in the wastewater at the Horton Lift Station once each month. Once Woodmen has taken a full year's worth of TDS samples at the Horton Lift Station, during the sampling period extending from November through October (the "Sampling Period") beginning after the Threshold Level is met, Woodmen shall calculate prior to the end of the calendar year the annual average of the TDS concentration in the wastewater at the Horton Lift Station for that Sampling Period, which will be considered representative of the TDS concentrations in the wastewater discharged from the Horton Property ("Horton TDS Concentration").

(ii) Woodmen also will sample once each month during the initial Sampling Period the TDS concentration in the wastewater at its existing Falcon Lift Station and calculate prior to the end of the calendar year an annual average of the TDS concentration, which will be considered representative of the TDS concentrations in wastewater discharged from the areas delivering wastewater into the Falcon Lift Station ("Woodmen TDS Concentration"). In the event Woodmen ceases use of the Falcon Lift Station in the future, or if it constructs an additional lift station to serve additional properties outside of the Horton Property, Woodmen will change and/or add to its sampling location(s) any new lift station(s), recalculate the Woodmen TDS Concentration, and notify Horton accordingly. If Woodmen samples at multiple locations, it will develop a flow-weighted mean TDS concentration as the Woodmen TDS Concentration. The Woodmen TDS Concentration, once established after the initial Sampling Period, shall not be subject to change except to the extent Woodmen ceases use of the Falcon Lift Station or constructs an additional lift station to serve additional properties outside of the Horton Property.

(iii) Woodmen will maintain all sampling data for at least five (5) years and annually notify Horton in writing of the prior Sampling Period's data and the calculated Horton TDS Concentration and Woodmen TDS Concentration. Woodmen will provide any sampling data to Horton at Horton's request.

(iv) Beginning in the January following the first Sampling Period in which Woodmen has calculated the Horton TDS Concentration and the Woodmen TDS Concentration, and for each successive calendar year, Woodmen may assess all Customers discharging to the Horton Lift Station a monthly surcharge for the succeeding calendar year following the Sampling Period to offset the costs associated with excess treatment, risk of noncompliance, risk of jeopardizing use of wastewater effluent for water rights purposes, and related administrative and legal costs ("TDS Surcharge"), on the following terms.

(1) For every 30 mg/l in excess of 30 mg/l that the Horton TDS Concentration exceeds the Woodmen TDS Concentration, the TDS Surcharge will be $1.20/month per SFE, assessed to each customer within the Horton Property, for the first year in which said TDS concentrations are calculated and compared. The amount of the surcharge will be increased, but not decreased, thereafter annually based on the CPI. Any applicable TDS Surcharge will be assessed monthly throughout the year after the determination and will be adjusted based on subsequent annual recalculations of the Horton TDS Concentration. For example, if the Horton TDS Concentration exceeds the Woodmen TDS Concentration by 61 mg/l during the initial

Sampling Period extending from November, 2026 through October, 2027, each Customer discharging to the Horton Lift Station in calendar year 2028 will be assessed a TDS Surcharge of $2.40/month per SFE, Woodmen will continue its monthly TDS sampling during the November, 2027–October, 2028 Sampling Period and will recalculate the Horton TDS Concentration for that Sampling Period and compare it to the Woodmen TDS Concentration to determine the TDS Surcharge, if any, to be assessed during calendar year 2029.

(2) Woodmen may not impose any TDS Surcharge until the Expansion is complete, in operation, and its discharge permit contains a TDS limit. In the event the Horton TDS Concentration is less than the Woodmen TDS Concentration, Woodmen is not obligated to impose a TDS Surcharge on any of its customers outside of the Horton Property.

(3) As a condition of allowing any other properties to connect to the Horton Lift Station, Woodmen shall require the sampling of TDS from the wastewater stream discharged from such other properties so that their TDS concentrations can be distinguished from the Horton TDS Concentration, or Woodmen shall waive the TDS Surcharge for the Horton Property until the sampling for such other properties can be accomplished. Woodmen shall not impose a TDS Surcharge on Customers on account of TDS concentrations from customers outside the Horton Property that discharge into the Horton Lift Station.

(v) Customers are prohibited from utilizing ion exchange, water softener systems, or any other in-home water treatment system that discharges concentrated brine wastes into Woodmen's sanitary sewer system; provided, however, that Horton shall not be liable to Woodmen for any damage or costs arising from any Customers' failure to comply with this Paragraph except to the extent caused by Horton.

(vi) Customers are subject to the Woodmen Regulations, as may be amended, including but not limited to Woodmen's Pretreatment Regulations for all non-residential customers, sewer use resolutions, and any restrictions or prohibitions otherwise approved by Woodmen.

5. **Covenants Run With Land**. This Agreement and the covenants, conditions and restrictions contained in the foregoing Paragraph 4 (the "Covenants") shall burden and run with the Horton Property for the benefit of Woodmen.

6. **Remedies**. Woodmen shall have the right to enforce the terms and conditions of the Covenants, including but not limited to by seeking and obtaining temporary and/or permanent injunctive relief against Horton or any Customer who has violated or threatens to violate any of the Covenants. All of the remedies permitted or available to Woodmen shall be cumulative and not alternative to any other remedies available at law or in equity, and an invocation of any such right or remedy shall not constitute a waiver or election of remedies with respect to any other permitted or available right or remedy.

7. **Notices**. Any notice or communication required or permitted herein shall be given in writing, sent by (i) personal delivery; (ii) expedited delivery service with proof of delivery; (iii) United States mail, postage prepaid, registered or certified mail; or (iv) electronic mail, addressed to the respective addresses set forth below, or to such other address or to the attention of such other

persons as hereafter shall be designated in writing by the applicable Party sent in accordance herewith. Any such notice or communication shall be deemed to have been given either at the time of personal delivery or, in the case of delivery service or mail, as of the date of first attempted delivery at the address and in the manner provided herein, or in the case of electronical mail, upon receipt, and addressed as follows:

To Horton:

Melody Homes, Inc.
9555 S. Kingston Court
Englewood, CO 80112-5943
Attn: Bill Carlisle
Email: wmcarlisle@drhorton.com

with copy to:

Davis & Ceriani, P.C.
1600 Stout Street, Suite 1710
Denver, CO 80202
Attn: Nicholas Dooher and John Baker
Email: ndooher@davisandceriani.com; jbaker@davisandceriani.com

and

Melody Homes, Inc.
9555 S. Kingston Court
Englewood, CO 80112-5943
Attn: Robert Coltin, Regional Counsel
Email: rcoltin@drhorton.com

To Woodmen:

Woodmen Hills Metropolitan District
8046 Eastonville Road
Falcon, CO 80831
Attn: Wally Eaves
Water and Wastewater Enterprises
Email: wallyeaves@whmd.org

with copy to:

Brownstein Hyatt Farber Schreck, LLP
410 17th Street, Suite 2200
Denver, CO 80202-4432
Attn: Wayne Forman and Michael Smith
Email: wforman@bhfs.com; msmith@bhfs.com

8. **Electronic Mail**. The Parties agree that: (i) any notice or communication transmitted by electronic mail shall be treated in all manner and respects as an original written document; (ii) any such notice or communication shall be considered to have the same binding and legal effect as an original document; and (iii) at the request of either Party, any such notice or communication shall be re-delivered or re-executed, as appropriate, by the Party in its original form. The Parties further agree that they shall not raise the transmission of a notice or communication by electronic mail as a defense in any proceeding or action in which the validity of such notice or communication is at issue and hereby forever waive such defense. For purposes of this Agreement, the term "electronic mail" means email.

9. **Term**. The Covenants shall continue in effect in perpetuity, unless and until they are unilaterally terminated by Woodmen in its sole discretion.

10. **Severability**. If any clause, sentence or other portion of this Agreement shall become illegal, null or void for any reason, or shall be held by any court of competent jurisdiction to be so, the remaining portion hereof shall remain in full force and effect and the court shall construe this Agreement as much as possible to give rise to the intent to the language hereof.

11. **Amendment to Agreement**. No representations, promises, terms, conditions or obligations regarding the subject matter of this Agreement, other than those expressly set forth herein, shall be of any force and effect. No modification, change or alteration of this Agreement shall be of any force or effect, unless it is in writing, and signed by the Parties.

12. **Counterparts**. This Agreement may be executed in counterparts, and upon full execution thereof, such copies taken together shall be deemed to be a full and complete agreement between the Parties.

13. **Venue, Governing Law, and Waiver of Jury Trial.** Venue for any and all legal actions regarding this Agreement shall lie in the District Court in and for the County of El Paso, State of Colorado, or if federal court, then in the Federal District Court in and for Colorado in Denver, Colorado. This Agreement and the rights and obligations of the Parties shall be governed by the laws of the State of Colorado. EACH PARTY HEREBY IRREVOCABLY AND UNCONDITIONALLY: (A) CONSENTS AND SUBMITS TO THE EXCLUSIVE JURISDICTION OF THE AFOREMENTIONED COURTS; (B) WAIVES ANY OBJECTION TO THAT CHOICE OF FORUM BASED ON VENUE OR TO THE EFFECT THAT THE FORUM IS NOT CONVENIENT; AND (C) WAIVES ANY RIGHT TO TRIAL BY JURY.

(*Remainder of Page Intentionally Blank*)

IN WITNESS WHEREOF, the Parties have set their hands and seals, effective the day and year first above written.

WOODMEN HILLS METROPOLITAN DISTRICT, ACTING BY AND THROUGH ITS WASTEWATER ENTERPRISE

By: ______________________________

Name: ______________________________

Its: ______President________________

ATTEST:

____

STATE OF COLORADO)
) ss.
COUNTY OF EL PASO)

The foregoing instrument was acknowledged before me this ______ day of

______________, 202__, by ____.

WITNESS my hand and official seal.

My Commission expires: ____________________________

____
Notary Public

MELODY HOMES, INC., A DELAWARE CORPORATION, D/B/A DR HORTON

By: ______________________________

Name: ______________________________

Its: ______________________________

ATTEST:

____

STATE OF COLORADO)
) ss.
COUNTY OF EL PASO)

The foregoing instrument was acknowledged before me this ______ day of

______________, 202__, by ____.

WITNESS my hand and official seal.

My Commission expires: ____________________________

____
Notary Public

EXHIBIT 1
TO RESTRICTIVE COVENANT AGREEMENT

Legal Description of DR Horton Property

(See Attached)

24663945

Exhibit A

PROPOSED PLAT OF GRANDVIEW RESERVE FILING NO. 1

A TRACT OF LAND BEING A PORTION OF SECTION 21, AND A PORTION OF THE NORTH HALF OF SECTION 28, TOWNSHIP 12 SOUTH, RANGE 64 WEST OF THE 6TH PRINCIPAL MERIDIAN, EL PASO COUNTY, COLORADO, BEING DESCRIBED AS FOLLOWS:

BASIS OF BEARINGS: THE EAST LINE OF SECTION 21, TOWNSHIP 12 SOUTH, RANGE 64 WEST OF THE 6TH PRINCIPAL MERIDIAN, EL PASO COUNTY, COLORADO, BEING MONUMENTED AT THE SOUTHERLY END BY A 3-1/4" ALUMINUM SURVEYORS CAP STAMPED ACCORDINGLY, PLS 30087, AND BEING MONUMENTED AT THE NORTHERLY END BY A 3-1/4"ALUMINUM SURVEYORS CAP STAMPED ACCORDINGLY, PLS30087, BEING ASSUMED TO BEAR N00°52'26"W, A DISTANCE OF 5290.17 FEET.

COMMENCING AT THE SOUTHEAST CORNER OF SECTION 21, TOWNSHIP 12 SOUTH, RANGE 64 WEST OF THE 6TH PRINCIPAL MERIDIAN, EL PASO COUNTY, COLORADO;

THENCE N00°52'26"W ON THE EAST LINE OF SAID SECTION 21, A DISTANCE OF 2,645.09 FEET TO A POINT ON THE NORTH LINE OF THE SOUTH HALF OF SAID SECTION 21;

THENCE N89°50'58"W, ON SAID NORTHERLY LINE, A DISTANCE OF 2,934.88 FEET TO THE POINT OF BEGINNING;

THENCE S11°05'24"W, A DISTANCE OF 24.40 FEET;
THENCE S78°54'36"E, A DISTANCE OF 185.19 FEET;
THENCE S26°50'16"W, A DISTANCE OF 203.39 FEET TO A POINT OF CURVE,

THENCE ON THE ARC OF A CURVE TO THE LEFT, HAVING A DELTA OF 32°15'55", A RADIUS OF 250.00 FEET, A DISTANCE OF 140.78 FEET TO A POINT OF TANGENT;

THENCE S05°25'39"E, A DISTANCE OF 185.30 FEET TO A POINT OF CURVE,

THENCE ON THE ARC OF A CURVE TO THE RIGHT, HAVING A DELTA OF 11°17'04", A RADIUS OF 1,140.00 FEET, A DISTANCE OF 224.52 FEET TO A POINT OF TANGENT;

THENCE S05°51'25"W, A DISTANCE OF 481.83 FEET TO A POINT OF CURVE;

THENCE ON THE ARC OF A CURVE TO THE LEFT, HAVING DELTA OF 55°09'30", A RADIUS OF 550.00 FEET, A DISTANCE OF 529.48 FEET TO A POINT OF TANGENT;

THENCE S49°18'05"E, A DISTANCE OF 342.14 FEET TO A POINT OF CURVE;

THENCE ON THE ARC OF A CURVE TO THE RIGHT, HAVING A DELTA OF 29°29'59", A RADIUS OF 1,050.00 FEET, A DISTANCE OF 540.61 FEET TO A POINT OF TANGENT;

THENCE S19°48'06"E, A DISTANCE OF 438.38 FEET TO A POINT OF CURVE;

THENCE ON THE ARC OF A CURVE TO THE LEFT, HAVING A DELTA OF 08°00'18", A RADIUS OF 1,950.00 FEET, A DISTANCE OF 272.44 FEET TO A POINT OF TANGENT;

THENCE S27°48'24"E, A DISTANCE OF 779.86 FEET TO A POINT OF CURVE;

THENCE ON THE ARC OF A CURVE TO THE LEFT, HAVING A DELTA OF 61°56'07", A RADIUS OF 190.00 FEET, A DISTANCE OF 205.39 FEET TO A POINT OF TANGENT;

THENCE S89°44'32"E, A DISTANCE OF 289.03 FEET;

THENCE S00°12'52"W, A DISTANCE OF 111.41 FEET TO A POINT ON THE SOUTH LINE OF THE NORTH HALF OF THE NORTH HALF OF SAID SECTION 28;

THENCE N89°47'08"W, ON SAID SOUTH LINE, A DISTANCE OF A DISTANCE OF 2,630.21 FEET;
THENCE N00°12'52"E, A DISTANCE OF 25.00 FEET;

THENCE N89°47'08"W, A DISTANCE OF 679.35 FEET;

THENCE N44°47'01"W, A DISTANCE OF 42.37 FEET;
THENCE N41°52'38"E, A DISTANCE OF 21.11 FEET;
THENCE N41°03'22"E, A DISTANCE OF 139.03 FEET; THENCE S89°58'12"W, A DISTANCE OF 288.62 FEET TO A POINT ON CURVE, SAID POINT BEING ON THE EASTERLY RIGHT-OF-WAY LINE OF EXISTING EASTONVILLE ROAD (60.00 FOOT WIDE);

THENCE ON SAID EASTERLY RIGHT-OF-WAY AS DEFINED BY CERTIFIED BOUNDARY SURVEY, AS RECORDED UNDER DEPOSIT NO. 201900096, THE FOLLOWING SEVEN (7) COURSES:

1. ON THE ARC OF A CURVE TO THE LEFT, WHOSE CENTER BEARS N79°27'48"W, HAVING A DELTA OF 18°12'30", A RADIUS OF 1,630.00 FEET; A DISTANCE OF 518.00 FEET TO A POINT OF TANGENT;

2. N07°40'18"W, A DISTANCE OF 777.34 FEET TO A POINT OF CURVE;

3. ON THE ARC OF A CURVE TO THE RIGHT, HAVING A DELTA OF 39°01'10", A RADIUS OF 1,770.00 FEET, A DISTANCE OF 1,205.40 FEET TO A POINT OF TANGENT;

4. N31°20'52"E, A DISTANCE OF 1,517.37 FEET TO A POINT OF CURVE;
5. ON THE ARC OF A CURVE TO THE LEFT, HAVING A DELTA OF 2°07'03", A RADIUS OF 1,330.00 FEET, A DISTANCE OF 49.15 FEET TO A POINT ON THE NORTH LINE OF THE SOUTH HALF OF SAID SECTION 21;
6. THENCE CONTINUING ON THE ARC OF A CURVE TO THE LEFT, HAVING A DELTA OF 09°53'50", A RADIUS OF 1,330.00 FEET, A DISTANCE OF 229.74 FEET TO A POINT OF TANGENT;
7. N19°19'59"E, A DISTANCE OF 81.04 FEET;

THENCE S74°09'13"E, A DISTANCE OF 47.53 FEET;
THENCE S27°01'36"E, A DISTANCE OF 35.92 FEET;
THENCE S71°02'24"E, A DISTANCE OF 160.69 FEET TO A POINT OF CURVE;

THENCE ON THE ARC OF A CURVE TO THE LEFT, HAVING A DELTA OF 07°52'12", A RADIUS OF 1,150.00 FEET, A DISTANCE OF 157.96 FEET TO A POINT OF TANGENT;

THENCE S78°54'36"E, A DISTANCE OF 237.75 FEET; THENCE S11°05'24"W, A DISTANCE OF 105.60 FEET TO THE POINT OF BEGINNING.

INFORMATIONAL NOTE ONLY:
CALCULATED AREA OF 8,253,692 SQ. FEET
OR 189.479 ACRES MORE OR
LESS.

PREPARED BY :
JONATHAN W. TESSIN, PROFESSIONAL LAND SURVEYOR
COLORADO PLS NO. 33196 FOR AND ON
BEHALF OF EDWARD-JAMES SURVEYING, INC.
926 Elkton Drive 4732 Colorado Springs, CO 80907

EXHIBIT BB: WATER/WASTEWATER REPORT

WATER RESOURCES
& WASTEWATER REPORT

For

Grandview Reserve
Sketch Plan

April 2020
Revised: August 2020

JDS-HYDRO CONSULTANTS, INC.

5540 TECH CENTER DR, SUITE 100, COLORADO SPRINGS, CO 80919 (719) 227-0072 FAX (719) 471-3401

WATER RESOURCES & WASTEWATER REPORT

APRIL 2020

REVISED: AUGUST 2020

Prepared for:

Land Development Companies
1271 Kelly Johnson Blvd. Ste 100
Colorado Springs, CO 80920

Prepared by:

JDS-Hydro Consultants, Inc
5540 Tech Center Dr, Suite 100
Colorado Springs, CO 80919

TABLE OF CONTENTS

1.0 INTRODUCTION

2.0 PROJECTED WATER DEMANDS

3.0 WATER SYSTEM FACILITIES & PHYSICAL SUPPLY

3.1 Source of Supply

3.2 Water Treatment

3.3 Water Storage

3.4 Distribution & Transmission Lines

3.5 Water Quality

4.0 WASTEWATER REPORT

4.1 Projected Wastewater Loads

4.2 Treatment Facilities

4.3 Collection and Pumping Facilities

APPENDICES

Appendix A – Site Plan Exhibit
Appendix B – Water Supply Information Summary—SEO Form
Appendix C – Overall Wastewater Systems Exhibit
Appendix D – Potential Service Letter from WHMD
Appendix E – Water Rights Documentation

1.0 INTRODUCTION

The purpose of this report is to address the specific water and wastewater needs of the proposed Grandview Reserve subdivision in Falcon, CO.

Development at Grandview Reserve by Land Development Companies consists of 768.23 acres and roughly 3,261 Single Family Equivalent (SFE) wastewater users (made up of single family residents, commercial, a church, and a school), located between Eastonville Rd and Highway 24, within Sections 21, 22, 27, and 28, all in Township 12 South, Range 64 West of the 6th Principal Meridian. Residential properties within the development will be provided water services through the proposed district formed as a part of the land use process.

A draft of the Sketch Plan including adjacent roadways is included in ***Appendix A***.

At this point, five (5) phases are anticipated, but not yet ordered or sequenced.

2.0 PROJECTED WATER DEMANDS

It is expected that each SFE in Grandview Reserve will require an average of 0.353 annual acre-feet of water. This anticipated water demand is consistent with historic needs for nearby developments.

Table 1 below summarizes the water demand estimations for Grandview Reserve.

Table 1: Water Supply and Demand Summary

Description	SFE's	Demand/SFE *(AF/Year)*	Total Demand *(AF/Year)*
Single Family Residences	3,260	0.353	1,150.78
School	10		3.53
Church	5		1.7
Commercial	59.5		21.00
Grant Totals	***3,334.5***		***1,177.08***

Notes:

- *Commercial demand is anticipated at 3.5 SFE's per acre (3.5*17=59.5 AF)*
- *Church and school SFE's are anticipated to be similar to other churches and schools in the Falcon area.*

Demand for housing, commercial, and institutional development is dynamic, and buildout will commence as market demands dictate.

The Water Supply Information Summary is located in ***Appendix B***.

3.0 WATER SYSTEM FACILITIES & PHYSICAL SUPPLY

3.1 Source of Supply:

Future local wells, mostly in the Arapahoe and Laramie-Fox Hills formations, will provide water for the Grandview Reserve subdivision. Off-site wells will likely be needed (from neighboring lands owned by 4-Site Investments, LLC) for full build-out.

- The total annual water demand for 3,332.4 SFE's is calculated to be 1,177.08 AF.
- 4 Site Investments, the property owner, owns 1,400 AF of Arapahoe non-tributary water.
- The adjoining 4 Way Ranch owns 2,023 AF of Laramie-Fox Hills non-tributary water, and 1,011 AF of Arapahoe non-tributary water.
- Any additional water, should it be needed, will be derived from the 4 Way Ranch water.
- Water from the Arapahoe and Laramie-Fox Hills formations is Non-Tributary, Non-Renewable water.
- A breakdown of demand vs. supply is below:

4 Site Water	1,400 AF
4 Way Ranch Water	3,034 AF
Total Supply	*4,434 AF*
Grandview Demand:	*1,177.08 AF*
300-Year Quantity:	*3,531.24 AF (Less than the available supply)*

Copies of the water rights listed above are located in ***Appendix E***.

In order to produce 1,177.08 AF of water (which equates to 1.05 million gallons per day, MGD), approximately 14 well sites will be needed. A well site will consist of an Arapahoe well and a Laramix-Fox Hills well with a total production rate of about 110 gallons per minute.

If the wells are pumped 12 hours per day, that equates to 79,200 gallons produced by each well site each day. Fourteen (14) well sites can produce 1.11 MGD (when only pumping half the time) in order to satisfy the demand of 1.05 MGD.

Grandview is to build the infrastructure on their land as well as on future off-site wells in 4-Way Ranch withholdings. A future IGA will be implemented between the parties.

3.2 Water Treatment:

Water treatment will be in the form of a single or multiple treatment facilities utilizing pressure-sand filtration. Ideally, a single centralized facility is easier for operation and maintenance. However, construction of a single facility capable of meeting buildout demands is not always economical in early stages. Therefore, two or more facilities may be constructed as building progresses.

Pressure-sand treatment systems are utilized by many other metropolitan districts in the Falcon area. They are typically used to treat secondary contaminant levels in source water (iron and manganese), primarily for aesthetics (taste and odor).

3.3 Water Storage

Water storage will have to be sized for the largest commercial building in the development and meet International Fire Code standards. That volume of water, referred to as "fire-flow volume," will be added to the Maximum Daily Demand to establish the required water storage volume.

3.4 Distribution & Transmission Lines:

Distribution lines will likely be PVC, adequately-sized to convey fire-flows throughout the subdivision. They will be constructed by Grandview. No other districts are planned to provide water or infrastructure for Grandview's water system. Only water from 4-Way Ranch withholdings will be used to supplement Grandview's supply, and, as mentioned above, Grandview will be responsible for building are required infrastructure.

3.5 Water Quality

Water quality must meet Colorado Department of Public Health & Environment (CDPHE) regulations for primary drinking water standards.

4.0 WASTEWATER REPORT

4.1 Projected Wastewater Loads:

Wastewater projections are based on similar districts' historical use in this area. It is expected that each SFE in Grandview Reserve will generate an average of 172 gallons/day of wastewater. Table 2 below summarizes the projected wastewater loads for Grandview Reserve.

Table 2: Projected Wastewater Loads Summary

Description	SFE's	Unite Base Flow ***(GPD)***	Average Daily Flow ***(GPD)***
Single Family Residences	3,260	172	560,720
School	10		1,720
Church	5		860
Commercial	59.5		10,234
Grant Totals	***3,334.5***		***573,534***

4.2 Treatment Facilities:

The regional wastewater treatment provider in the area of Grandview Reserve is the Woodmen Hills Metropolitan District (WHMD). WHMD has constructed a new regional wastewater treatment facility which was placed online in the spring of 2019. The new plant is an advanced wastewater treatment plant with a rated hydraulic capacity of 1.3 MGD. WHMD is currently in compliance with its discharge permit and the treatment facility has adequate capacity for the additional flows.

Current loading at the facility is roughly 68%, but adequate capacity does not currently exist to handle the additional expected flows from Grandview.

As the regional wastewater treatment provider in the area, the District may possibly have excess capacity to serve future development contingent upon a potential service agreement, a future Inter-governmental Agreement (IGA) between the two agencies, and possible inclusion into the District.

Please refer to ***Appendix C*** for a map showing possible location of connection to WHMD's system, as well as the location of WHMD's treatment facility.

4.3 Collection and Pumping Facilities:

This project will be required to install gravity sewer facilities in accordance with certain standards and approvals. Said gravity sewer facilities could connect to existing collection systems owned and operated by WHMD.

Wastewater pumping facilities will be necessary to serve the Grandview Reserve Subdivision. A potential wastewater service letter from WHMD is included in ***Appendix D***.

EXHIBIT CC: WATER/WASTEWATER COMMITMENT LETTERS

WOODMEN HILLS
METROPOLITAN DISTRICT

January 13, 2023

Riley Hillen, PE

DR Horton

9555 S Kingston Ct

Englewood, Colorado 80112

Re: Will-serve for wastewater service for Grandview Reserve Development

Dear Mr. Hillen,

The above-named development encompasses 768.23 acres of land outside WHMD boundaries in El Paso County that will be a mixed-use residential community of approximately 3,500 single family residential equivalents.

The above said development has approached WHMD for wastewater services. This letter is a notice of "will-serve" for the Grandview Reserve. At present, WHMD can only take on a partial capacity of the wastewater treatment needed by Grandview Reserve (900 SFE's). Through the negotiation of an IGA between WHMD and Grandview Reserve (DR Horton), full ability to treat the total 3,500 SFE's can be obtained.

A full Commitment Letter will be granted upon signing and approval of an IGA between WHMD and DR Horton.

If you have any questions, please do not hesitate to call.

Sincerely,

Walter J. Eaves

Wally Eaves, Wastewater Enterprise Director, Woodmen Hills Metropolitan District

Cc: John P. McGinn, District Engineer

JD Shivvers, Water Enterprise Director

Grandview Reserve Metropolitan District

4 Site Investments LLC
1271 Kelly Johnson Blvd, Suite 100
Colorado Springs, CO 80920

July 20, 2021

Dear 4 Site Investments, LLC:

Grandview Reserve Metropolitan District #1 ("Project") has asked the Grandview Reserve Metropolitan District ("District") for the availability of water to service the Project located between Highway 24 and Eastonville Road. The Project is proposed to include approximately 581 single-family equivalent ("SFE's") dwelling units (571 single-family houses, 10 Church/Recreation Center), and will be within the service area of the District. The District is in the process of obtaining Title 32 status through El Paso County. With the creation of this district, the water master plan will be developed to include multiple large capacity wells and associated collection system that will be treated, stored and distributed in order to provide service to all properties within the District.

Upon completion of the first phase, the expandable large well collection system capacity will be sufficient to serve approximately 581 SFE's based on presumptive use of 0.353 ac/ft per SFE annual demand, considering process waters, drought/irrigation and pumping contingencies. The developer has determined that this volume is sufficient for the Project.

This commitment to serve the Project is based upon the approval of the Grandview Reserve Metropolitan District Title 32 status. Final required water quantities may be adjusted depending on the approved final plat SFE requirements of the Project.

Sincerely,

Paul J Howard

Manager

Enclosure

CC:

CHEROKEE METROPOLITAN DISTRICT
6250 Palmer Park Blvd., Colorado Springs, CO 80915-2842
Telephone: (719) 597-5080 Fax: (719) 597-5145

July 20, 2021
4 Site Investments, LLC
1271 Kelly Johnson Blvd. #100
Colorado Springs, CO 80919

Sent via email: paulinfinity1@msn.com

Re: Wastewater Treatment Service Commitment to Grandview Reserve Metropolitan District

Dear Grandview Reserve Metropolitan District,

As requested, this document will serve as a formal Letter of Commitment from the Cherokee Metropolitan District to provide wastewater treatment services for the Grandview Reserve development located north and northeast of the intersection of U.S. Highway 24 and Stapleton Road, subject to the mutual execution of a Wastewater Service Intergovernmental Agreement (IGA). Cherokee Metropolitan District owns and operates a wastewater conveyance and treatment system south of the development and has entered good faith negotiations with the development to complete the IGA, which will define the terms of all related wastewater services.

Cherokee Metropolitan District has allocated 500,000 gallons per day of wastewater treatment capacity to this development under the terms of the draft IGA. This capacity is sufficient to serve between 2900-2950 SFEs based on presumptive use values from El Paso County. The developer has determined that this volume is sufficient for the proposed subdivision.

This wastewater commitment is hereby made exclusively for this specific development project up to the daily average volume specified above, contingent upon execution of the IGA. To confirm this commitment, the developer must provide the District with a copy of the final plat approval from El Paso County Development Services within 12 months of the date of this letter. Otherwise, the District may use this allocation for other developments requesting wastewater treatment. If the volume of wastewater treatment in the agreement is changed by a subsequent amendment, this letter will no longer be valid and an updated one reflecting this change will be provided.

If I may be of further assistance, please contact me at your convenience.

Sincerely,

Amy Lathen
General Manager

Cc: Peter Johnson; Water Counsel w/ encl: sent via email
Steve Hasbrouck; Board President w/ encl: sent via email
Jeff Munger; Water Resource Engineer: sent via email
Kevin Brown; Jr. Engineer: sent via email

EXHIBIT DD: CDPHE CORRESPONDENCE

HRGreen

▷5619 DTC Parkway | Suite 1150 | Greenwood Village, CO 80111
Main 720.602.4999 + **Fax** 844.273.1057

▷HRGREEN.COM

February 15, 2023

Ms. Kari Parsons
Planning & Community Development Department - Land Use Review Division
City of Colorado Springs
2880 International Circle
Colorado Springs, CO 80910

Re: CDPHE Correspondence

Dear Ms. Parsons,

Coordination with the Colorado Department of Public Health and Environment (CDPHE) has taken place to discuss the Water Treatment Facility as well as the Wastewater Lift Stations and Forcemains that will service the Grandview Reserve Metropolitan District (GRMD). Mark Volle and I met with Doug Camrud (CDPHE Engineering Section Unit Manager) and Ian Sutton (CDPHE Senior Review Engineer) on January 6, 2022 to discuss the project. Follow up emails regarding CDPHE requirements are enclosed.

GRMD intends to submit the following to CDPHE:

i. Site Location Application for lift station(s) – Anticipated submittal date: June 2023
ii. Construction documents and Basis of Design Report (BDR) for lift station(s) and force main(s) – Anticipated submittal date: February 2024
iii. BDR and Construction Documents for the water system including water treatment facility, source water (wells) and storage tank – Anticipated submittal date: November 2023

Copies of all CDPHE approvals will be provided to EPC as they are obtained.

Sincerely,

HR GREEN, INC

Gregory Panza, PE, PMP
Senior Project Manager

Volle, Mark

From: Sutton - CDPHE, Ian <ian.sutton@state.co.us>
Sent: Friday, February 11, 2022 2:53 PM
To: Volle, Mark
Subject: Re: Reg 22 question

Hello Mark,

You are correct that we do not require the geotechnical report as part of the site application process for new lift stations. We do however require a geotechnical report to evaluate any natural hazards that would endanger the lift station during the design review. The exact text can be found in the **State of Colorado Design Criteria for Domestic Wastewater Treatment Works Section 1.3.2(c).** I have seen it where the geotech report is still submitted with the site application because it has been prepared and we just carry that over to the design review. But if you are in the process of creating the site application and do not want to wait for the geotech report to be finalized, then you can just submit it with the PDR.

Hopefully that helps and is what you are looking for. Let me know if you have any other questions.

Thanks and I hope you have a great weekend as well,

Ian Sutton, P.E.
Senior Review Engineer
Engineering Section
Pronouns: He/Him

COLORADO
Water Quality Control Division
Department of Public Health & Environment

P 303.692.6430
M 720.260.4629
4300 Cherry Creek Drive South, Denver, CO 80246
ian.sutton@state.co.us | www.colorado.gov/cdphe/wqcd

On Fri, Feb 11, 2022 at 9:07 AM Volle, Mark <mvolle@hrgreen.com> wrote:

> Ian,
>
> Im getting started on the site applications that we’ve discussed recently. The last time I submitted a site app for a lift station was under Reg 22.7 I think and at the time a geotechnical report was required. In reviewing the updated Reg 22, I have not found a requirement for geotechnical reports for lift stations. Could you please confirm that geotechnical

reports are not required for lift station site apps? Or if they are, please let me know the section of Reg 22 that requires them. I really appreciate your time in answering my questions.

Thanks and have a great weekend!

Mark Volle, PE

Lead Engineer - Water

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HRGreen.

1975 Research Parkway | Suite 230 | Colorado Springs, CO 80920
Main 719.300.4140 | **Direct** 719.394.2436
HRGREEN.COM

Volle, Mark

From: Sutton - CDPHE, Ian <ian.sutton@state.co.us>
Sent: Friday, January 28, 2022 10:42 AM
To: Volle, Mark
Subject: Re: Legal control

Hello Mark,

Sorry for the delay. We can move forward with the site application with the contract documentation showing the description of the property and what will be owned by the system. The site approval letter will have a condition of approval stating that the final design cannot be approved until the system can show full ownership and control of the property. So the system will need to close on the property and have the documentation to show control prior to design review.

Hopefully that all makes sense. Let me know if you have any questions.

Thanks,

Ian Sutton, P.E.
Senior Review Engineer
Engineering Section
Pronouns: He/Him

COLORADO
Water Quality Control Division
Department of Public Health & Environment

P 303.692.6430
M 720.260.4629
4300 Cherry Creek Drive South, Denver, CO 80246
ian.sutton@state.co.us | www.colorado.gov/cdphe/wqcd

On Wed, Jan 26, 2022 at 4:16 PM Volle, Mark <mvolle@hrgreen.com> wrote:

> Ian,
>
> I reviewed Reg 22 and found the following:
>
> Section 22.9(1)(b)(iv) states that we need to provide "legal arrangements showing control of the site…or showing the ability of the entity to acquire the site or right-of-way and use it for the project life." If the project owner for a lift station project has a parcel under contract but has not closed on it, is that sufficient evidence that they have the ability to acquire it? In this case, the owner has the parcel under contract and can close on it anytime in 2022. They would

prefer to wait to close until the Site App is approved because if it isn't approved for some reason, then they would have a property that isn't useful for them.

Im asking now because the local 208 reviewer (PPACG) has stated that they will defer to CDPHE on what satisfies that section of Reg 22 so having clarification from you now will help guide the local 208 review process. We haven't submitted yet but are working on the application. If you have any questions, please let me know.

Thanks,

Mark Volle, PE

Lead Engineer - Water

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Main 719.300.4140 | **Direct** 719.394.2436
HRGREEN.COM

EXHIBIT EE: APPLICANT RESUMES

Gregory Panza, PE, PMP | Senior Project Manager

With more than 20 years of experience, Greg manages and master plans land development and municipal projects. He offers experience in both the engineering and construction realms. As a Professional Engineer, Greg has provided management of major civil infrastructure for healthcare, residential, recreational, training, and commercial projects. His project management, construction management, and general contracting experience, nearly 15 years in total, has included project sequencing for multi-year construction, including 5-years managing construction for the National Park Service's Intermountain Region. Greg has managed construction schedules, budgets, and on-site contractors for multi-million dollar projects. Greg brings a broad knowledge of the civil field, including drainage, construction inspection, surveying, and stormwater management analysis. His project experience ranges from hydrologic & hydraulic analysis, utility and drainage studies consistent with FEMA, Corps and local requirements, utility coordination, heavy civil utility construction, mass grading, and roadway design projects with construction costs of up to $20 million.

EXPERIENCE

25 Years

EDUCATION

BS, Civil Engineering, Ohio University- 1996

REGISTRATION / LICENSE

Professional Engineer, CO, 37081, 2002

SPECIALIZED TRAINING & CERTIFICATIONS

FAC Academy Program/Project Manager (FAC-P/PM)
Contracting Officer Representative (COR)

SELECTED PROJECT EXPERIENCE

171006.01
Home Place Ranch-Engineering - Goodwin Knight
Project Manager
Home Place Ranch retained HR Green to provide Preliminary Engineering, Planning, and Landscape Design services required to seek Preliminary P.D. Site Plan approval form the Town of Monument for the Phase One area. Home Place Ranch is approximately 427 acres within the town of Monument, CO in northern El Paso County. It is bordered by Higby Road on the northern property boundary, Promontory Pointe and Jackson Creek communities on the south and southwest.

Greg was responsible for managing the infrastructure design and working with the client on phasing of development

OTHER FIRM EXPERIENCE

Todd Creek Village North | Adams County, CO
Senior Project Manager for this 930-acre mixed-use master plan in north Denver metro area within the Todd Creek Metro District. Project includes a multi-phased development and infrastructure master plan. Initial phases of the project required on-site treatment of sanitary effluent and recirculation of effluent into an irrigation distribution system for a 180-lot and two commercial outlot development.

Adams Crossing | Brighton, CO

At the forefront of innovation, this 780-acre project will be Colorado's first true "Agriburbia Development", combining agricultural, residential, and urban development. The project is designed to take advantage of the disconnected impervious areas to improve water quality and decrease the need for flood attenuation along Second Creek.

The project requires drainage swales, sediment basins, detention and channel facilities and connections into existing regional trail system. HEC-RAS studies were conducted to verify flood boundaries based on the currently farmed land to determine consistency with FEMA FIRM panels. The detention pond areas are designed to straddle the 100-year flood limits to expand the floodplain boundary, decreasing the overall high water level.

Mountain Sky | Ft. Lupton, CO
Senior Project Manager for this 80-acre, 6 phase single-family subdivision within Ft. Lupton. This project is located at the
bottom of an 800-acre drainage basin and required upstream bypass flow routing through the development. High ground water conditions led to the design of cut-off walls and subdrainage underdrain system to make basement products an option. Bedrock located near the surface was mapped and grading was designed to eliminate the need for rock excavation during mass-grading operations. Offsite infrastructure included improvements to CDOT Highway 52 and installation of offsite irrigation and water distribution from one mile away.

Big Horn Regional Northern Supply Pipeline | Worland, WY
Construction Manager for this $8M regional water line spanning across four rural towns. One pump house, two pressure vaults, a one-million-gallon concrete storage tank, 17 miles of distribution piping, three river crossings, coordination with four towns, two counties, BLM, USDA, two regional water boards and multiple land owners. Coordinating schedules of 14 subcontractors and 19 suppliers. Responsible for value engineering analysis, subcontractor solicitations, construction means and methods, project submittals, scheduling, permitting, public affairs, project budget and personnel staffing. National Park Service project.

Sable Blvd & Alameda Pkwy Waterline Relocation for Sable Basin & City Center Project (MESA IV PROJECT) | Aurora, CO
Utility infrastructure for a 362,500 SF open space and TOD. Lowering of a 36” potable waterline, considering the various forces acting on the pipe and bends to design restraints, thrust blocks, and add a blow off and air vac. Rerouting of an 8” waterline, adding various bends to the line. Also: 2300 LF of 84-108” RCP for stormwater, pipe hydraulics, H&H, pressure pipe flow, UDSewer calculations, outfall analysis, watershed analysis, and construction plans and specs. Internal Project Management.

Pelican Lake Ranch | Weld County, CO
This project consisted of a 2,700-acre residential estate home project surrounding Milton Lake Reservoir. A CUHP and SWMM analysis was conducted, modeling critical overflow routes, eventually making its way to Milton Lake Reservoir. Improvised erosion control BMP’s to control sandy soil conditions were implemented throughout this catchment.

This project was intertwined with gas and oil field tanks, derricks and piping. Coordination with five oil and gas companies for the rerouting and/or preservation of existing lines and derricks was required to create a safe community, assuring pipelines were not exposed due to sediment transport during large rain events.

Griswold Water Treatment and South Satellite Improvements | Aurora, CO
This project was experiencing major sediment transport and environmental concerns. Both of the sites were impacted by lack of vegetation, a prairie dog colony, steep slopes, poor stormwater conveyance and a lack of irrigation. Increased runoff was transporting mineral and organic sediment as well as asphalt millings and vehicle runoff across the site to the Cherry Creek drainageway.

A sub-watershed study was completed for the area tributary to the Griswold Water Treatment Plant and the South Satellite Maintenance Facility. Solutions included redirecting, regrading and installing approximately 6,000 SY of erosion control matting to facilitate spawning of vegetation. Hyporheic baffles were installed to settle out phosphorus and sulfides and plantings installed along the drainage channels to uptake undesired soluble minerals. Five-acres of restoration resolved erosion transport issues.

Sewer Improvements for Lima Alley and Paris Alley at Montview Boulevard | Aurora, CO
Project Manager for this project consists of resolving clogging and capacity issues of the sanitary sewer system within the alleys of Lima Street and Paris Street to increase overall capacity along East Montview. Project required analyzing upstream tributary basins and designing a 3-mile sanitary sewer bypass system through the existing infrastructure of old-town Aurora.

Oxford Station Transit Oriented Development | Englewood, CO
Project Manager for this project demonstrates Greg's experience on TOD projects for private developers. The 3.5-acre in-fill site at Oxford Light Rail Station is constrained on three sides and consists of 40,600 SF industrial warehouse facilities and 9500 SF commercial facilities, as well as the addition of two proposed buildings (24,100 SF and 26,400 SF). Infrastructure design includes utility design and location, easement services, drainage, traffic impact study, erosion control, storm water master plan, water and sewer utilities, grading, and hydrology & hydraulics (H&H). There is a large sewer line crossing on the north side of the site, and the existing storm sewer floods often. Requires analysis of impact to the Platte River.

Blake Street Artisan, Denver, CO
Located in the LoDo section of Denver, this infill project required creative flood attenuation and water quality treatment to be viable. The project is situated on an existing contaminated manufacturing warehouse. Infiltration of stormwater was prohibited due to the spreading of soil contamination. A series of ground level water quality gardens and separators were installed to facilitate initial treatment. Stormwater was directed to sand filters, gravity drained to underground detention storage and released to non-contaminated areas via level spreaders, eventually sheet flowing to the Platte River.

Cherry Creek Vista Filing 17-B, Greenwood Village, Colorado
This project consisted of a 30-acre infill residential development along Cottonwood Creek within the Cherry Creek reservoir drainage basin. Project included 108 single family homes, utilities, roadway system, water quality and detention pond system. Coordination with the Army Corp of Engineers was required to re-establish wetlands and create new wetlands.

Christian McFarland, PE | Lead Engineer

Chris is a dedicated and creative Professional Engineer with design expertise in drainage, floodplain management, grading, erosion control, utility design and roadway design. Wide range of experience that includes simple intersections and pad site design to master planning multiple section land development projects, and complex roadway expansions. He has proven ability to design and deliver projects on time and on budget.

EXPERIENCE

14 Years

EDUCATION

BS, Civil Engineering, Colorado State University- 2006

REGISTRATION / LICENSE

Professional Engineer, CO, 44947, 2011

SPECIALIZED TRAINING & CERTIFICATIONS

Drainage Related:
UDFCD Stream Academy
HEC-RAS 2D Modeling
EPASWMM Advanced Modeling Techniques
Green Infrastructure and Low Impact Development Design
Best Management Practices for Construction in Waterways
Certified Floodplain Manager (License lapsed, need to renew fall 2019)

Federal Government Related:
UFC-Minimum Antiterrorism and Force Protection Standards for DOD Buildings SpecsIntact

PROFESSIONAL AFFILIATIONS

Society of American Military Engineers
Colorado Association of State Floodplain Managers

SELECTED PROJECT EXPERIENCE

180382.02
CDN Red Rocks LP - CDN Rooney Gulch - CDN Red Rocks LP
Project Engineer
This 800-unit master planned multifamily community is located along the main corridor along the hogback. leading into the mountains. One of the primary features of this community is an approximate one-mile stretch of gulch within the Rooney Gulch Watershed. HR Green was contracted to provide a sustainable solution for stabilizing the gulch, anticipating the development to occur within the entire corridor. HR Green worked with Urban Drainage and Flood Control District on establishing a bio-engineered approach to managing the increased run-off as a result of development.

Chris was responsible for design and calculations for the grade control and bank stabilization structures proposed within the gulch. Chris also assisted in analyzing the SWMM model for the hydrologic analysis of the site to size numerous detention and water quality facilities for the overall development.

OTHER FIRM EXPERIENCE

I-25 & Erie Parkway Master Plan – Erie, CO
Project Manager
Chris was responsible for early planning and engineering for future master development led by the Town of Erie. The I-25 and Erie Parkway Master Plan encompasses the 1,280 acres of land located at the northwest corner of I-25 and Erie Parkway. The Town's intent is to create a regionally-scaled retail and employment center at Erie's eastern gateway servicing the Northern Colorado marketplace that is recognized as a true destination where businesses and people flourish. The vision for the development future of the Plan area is one that maximizes the site's revenue generating potential while employing sound land use and high quality design principles.

Land Development Project – Commerce City, CO
Project Manager
Chris was the lead designer for a ~350 single family home development in Commerce City. Worked with adjacent developers, Commerce City and UDFCD to design a major outfall channel and detention standards for a large drainage area for multiple developments.

Meridian Village Development – Denver, CO
Project Engineer
Chris provided site utility engineering, over lot grading for Meridian Village development. Located south of Lincoln Avenue & east of I-25 the will feature rolling home sites, spectacular views of the Front Range Mountains, and Downtown Denver.

Christian Brothers Automotive – Various Locations
Project Manager
Chris provided project management and lead design for various Christian Brothers Automotive shops within the state of Colorado. Chris led all planning processes and partners on the projects for plat approval, site development design and preparation of construction documents.

Cannon Air Force Base SOPS Training Facility
Project Manager
Responsible for design and management of a large base expansion at Cannon Air Force base including site layout, grading, utility design, specification preparation and construction Administration.

Municipal Project and Light Rail Addition – Aurora, CO
Project Manager
Responsible for master drainage analysis for a 2.5 square mile drainage basin, new Light Rail Station connection to the Aurora Municipal Center and design of a large pre-cast structure beneath a 6 lane arterial road.

Hospital Expansion – Cortez, CO
Project Manager
Responsible for design and project management including parking lot site layout and grading, drainage design, utility construction, erosion control design, specification preparation and construction administration services.

Tinker Air Force Base – Oklahoma City, OK
Project Manager
Responsible for design included grading, drainage, utilities, site layout, specification preparation and construction administration services to accommodate KC-46A airplane.

Toll Gate Creek Bank Stabilization - Aurora, CO
Lead Designer
Responsible for design, alternative analysis, and modeling for a river bank stabilization project within the City of Aurora.

Aurora High Line Canal Improvements - Aurora, CO
Project Manager
Responsible for design, alternative analysis, project management, and plan preparation for approximately 4 miles of regional parks trail. Work included coordination and design for an at-grade rail road crossing, at-grade crossing of a major collector including traffic signalization, and a grade separated crossing of I-70, a major interstate Highway.

First Creek Interceptor - Aurora, CO
Project Manager
Responsible for design, alternative analysis, project management, and plan preparation for a new 36" gravity sewer line for the City of Aurora. Work included alternative analysis of various routing options and construction methods, plan preparation, and coordination with the local health department and other various stakeholders for approval.

Ground Water Recharge System – Fort Morgan, CO
Project Engineer
Responsible for design, alternative analysis, and plan preparation for a groundwater recharge system for various land owners and farmers near Fort Morgan Colorado. Design included ~3.5 miles of non-potable water line, river intake and pumping system in order to carry water to various groundwater recharge ponds for future irrigation purposes.

Trevor Igel, EIT | Staff Engineer II

Trevor has a variety of hands on experience ranging from the physical analysis of hydraulic phenomena, to stream, wetland and general ecosystem restoration. His experience also includes computational hydraulic and hydrologic analysis, drainage design, grading, erosion control, surveying and construction inspection. Trevor is proficient in AutoCAD, Civil 3D, GIS, 1 and 2 Dimensional HEC-RAS analysis and SWMM modeling.

EXPERIENCE

2 Years

EDUCATION

BS, Environmental Engineering, Colorado State University - Fort Collins- 2019

REGISTRATION / LICENSE

Engineer In Training, CO, N/A, 2019

PROFESSIONAL AFFILIATIONS

ACEC Scholarship Review Committee

SELECTED PROJECT EXPERIENCE

160473
Nevada WWTF and Trunk Sanitary Sewer Improvements - City of Nevada, IA
Staff Engineer
Facility planning, antidegradation alternative analysis, SRF loan for new 8.5 mgd plant to meet the needs of new effluent limits, nutrient removal requirements, future growth and industrial expansion. Conveyance package includes pump station, force main, and trunk sewer from old plant to new plant approximately 3.5 miles south. Design elements include:

- Administration & Maintenance Building
- Headworks Building (Screening and Grit Removal)
- 3-Stage Oxidation Ditches for nutrient removal
- Secondary Treatment Building (with laboratory)
- Secondary Clarifiers
- Ultraviolet (UV) Disinfection Building
- Aerobic Digesters with integral thickening system
- Solids Processing Building
- Biosolids Storage Tank
- New outfall

The project also involved process modeling, easements, survey, and geotechnical soil borings.

Trevor was the Staff Engineer on this project.

171006.01
Home Place Ranch-Engineering - Goodwin Knight
Staff Engineer
Home Place Ranch retained HR Green to provide Preliminary Engineering, Planning, and Landscape Design services required to seek Preliminary P.D. Site Plan approval form the Town of Monument for the

Phase One area. Home Place Ranch is approximately 427 acres within the town of Monument, CO in northern El Paso County. It is bordered by Higby Road on the northern property boundary, Promontory Pointe and Jackson Creek communities on the south and southwest.

Trevor was responsible for site grading, preparation of the preliminary utility plans, drainage analysis, and preliminary construction drawings.

180382.02
CDN Red Rocks LP - CDN Rooney Gulch - CDN Red Rocks LP
Staff Engineer
This 800-unit master planned multifamily community is located along the main corridor along the hogback. leading into the mountains. One of the primary features of this community is an approximate one-mile stretch of gulch within the Rooney Gulch Watershed. HR Green was contracted to provide a sustainable solution for stabilizing the gulch, anticipating the development to occur within the entire corridor. HR Green worked with Urban Drainage and Flood Control District on establishing a bio-engineered approach to managing the increased run-off as a result of development.

Trevor was responsible for the hydraulic analysis of the project site as well as the analysis of the changes development poses on the sites hydrology. Trevor also assisted in the development of the preliminary planset for proposed gulch stabilization, water detention and quality facilities as well as site grading.

181211.17
Aerotropolis Area Coordinating Metropolitan District - The Aurora Highlands - Miscellaneous - Aerotropolis Area Coordinating Metropolitan District
Staff Engineer
HR Green is providing Engineering Services for the Aurora Highlands Master Planned Community located in Aurora, Colorado. The Aurora Highlands consists of approximately 3,150 total acres within the City of Aurora. This project includes the development of a Framework Development Plan Manual including Master Drainage Study, Master Utility Study and, Public Improvement Plan. Kristine was responsible for all H&H analysis and development of the master drainage plan report requiring approval from the City of Aurora and UDFCD.

Trevor assisted in the analysis of site hydrology as well as the development of a site drainage plan, sanitary sewer design, and the master drainage and master utility studies.

Sarah Fernandez l Design Technician l

Sarah is an analytical and detail-oriented individual with acute knowledge of drafting technologies. She will support the design and construction services task lead to ensure that tasks are completed efficiently and accurately. Her diverse background in communication and design is an asset in producing clear, detailed plans. Sarah has experience in digital drafting and 3-D modeling in AutoCAD and Civil 3D.

EXPERIENCE

1 Years

EDUCATION

MA, Literature, University of Colorado- 2016
BA, Humanities, University of Colorado- 2013
AAS, Drafting Technologies, College of Southern Idaho- 2020

SELECTED PROJECT EXPERIENCE

180582
Fountain Mesa Road and Caballero Ave. Design On-Call - El Paso County, CO
Design Technician
HR Green was retained by the County of El Paso, CO to provide Civil Engineering Planning and Design services for the Fountain Mesa Road/Caballero Avenue Intersection project. HR Green's services included project coordination, project management, traffic study, conceptual and preliminary design.

Sarah assisted in developing and editing plan sets for the project by importing and analyzing survey data and design elements. She ensured clarity and accuracy of plans sets for final submittal. She also attended a webinar on roundabout design concepts in consideration of this project.

181211.37
Aerotropolis Area Coordinating Metro District - The Aurora Highlands - Prairies Water Relocation - Aerotropolis Area Coordinating Metropolitan District
Design Technician
Sarah played an integral role in developing the sheet set for this project and organizing various data references and design elements to ensure plans were clear and straightforward. She applied her research skills to ensure the large-scale project made considerations for the upstream and downstream impacts of the pipeline.

191850
All Pro Capital - Woodmen Heights Commercial Center - All Pro Capital
Design Technician
As Design Technician, Sarah collaborated with professionals in various engineering disciplines to ensure that Landscaping, Water, and Land Development needs were addressed succinctly in the Woodmen Heights Commercial Center plans. She exercised critical attention to detail in revising plan sets for Water, Sanitary, Utility, Grading and Erosion, and Roadway Design.

19P0781
UDFCD, CO - Rooney Gulch FBP Section - Mile High Flood District, CO
Design Technician
Sarah was responsible for transferring design elements from Autodesk Civil 3D into GIS. She communicated with the client to ensure the files were accessible and the file type suited their needs.

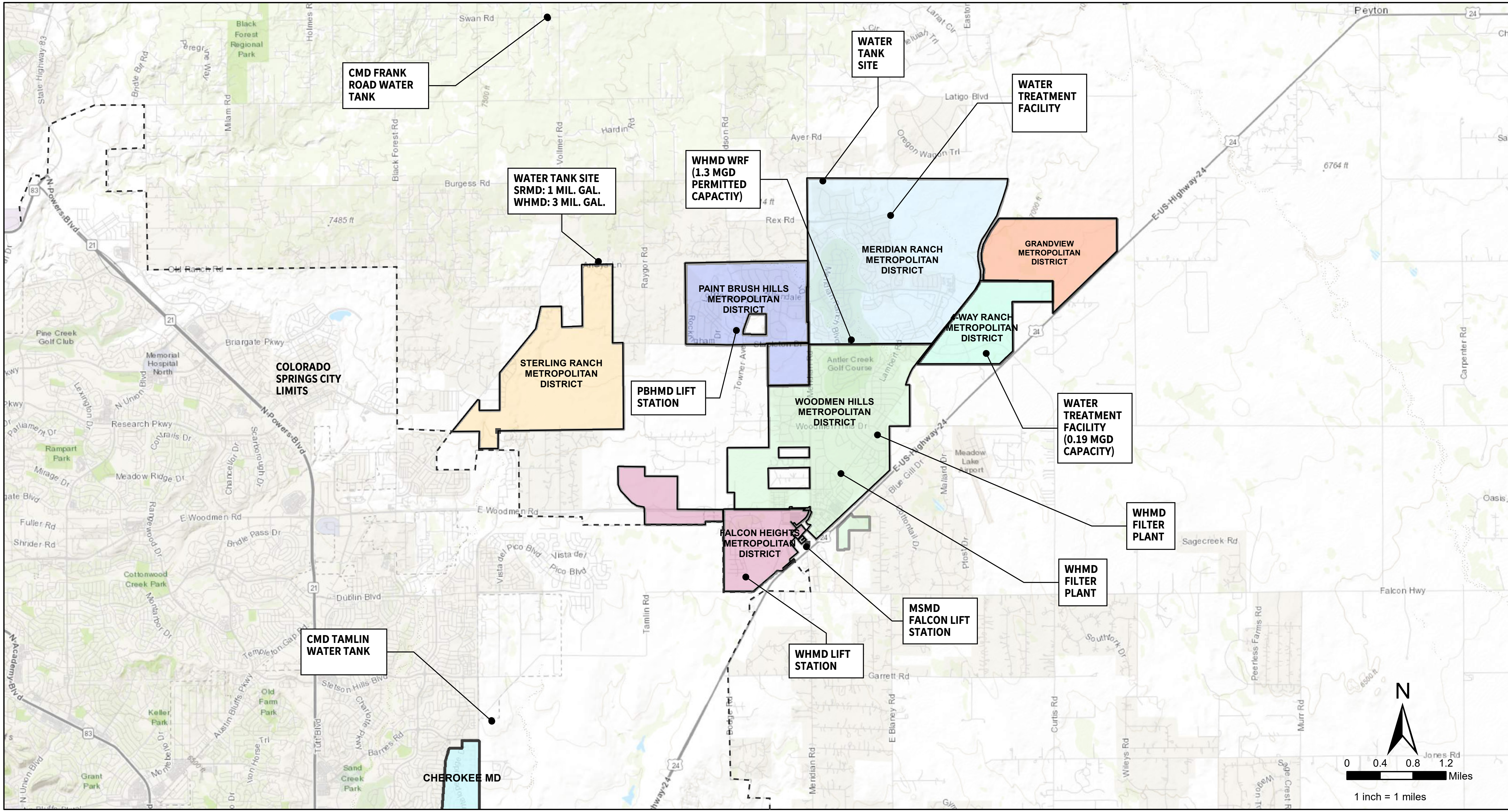
200106.01
Inland Group, CO - Copper Apartments at Greeley - Copper Platte Apartments, LLC
Design Technician
Sarah worked to set up sheet layouts and preliminary design elements to expedite the plan development process. Through this project, she gained valuable insight into elements of Land Development to add to her knowledge of Water Operations.

200192
Westminster, CO - On-call Engineering Services - City of Westminster, CO
Design Technician
Sarah used project data to develop maps and exhibits demonstrating the most effective grouping of projects for maintenance of various city drainage and storm sewer networks.

200192.01
Westminster, CO - Legacy Ridge Golf Course Drainage - City of Westminster, CO
Design Technician
Sarah was responsible for the layout, design, and revision of the plan sheets involved in the portion of this project. She gained insight into sustainable water retention design through Total Hydrology Planning and Green Drainage Systems trainings and applied her knowledge in her reviewing of the project plan sheets.

200548
Lafayette, CO - Copper Stone Apartments Floodplain - Inland Group
Design Technician
Sarah assisted in compiling the necessary information and digital exhibits to submit a completed a LOMC floodplain revision application. She worked to gain a greater knowledge of FEMA standards and familiarize herself with the process of floodplain management by attending the ASFPM webinars.

EXHIBIT FF: SURROUNDING INFRASTRUCTURE



Grandview Metropolitan District

Surrounding Metropolitan Districts Infrastructure Map

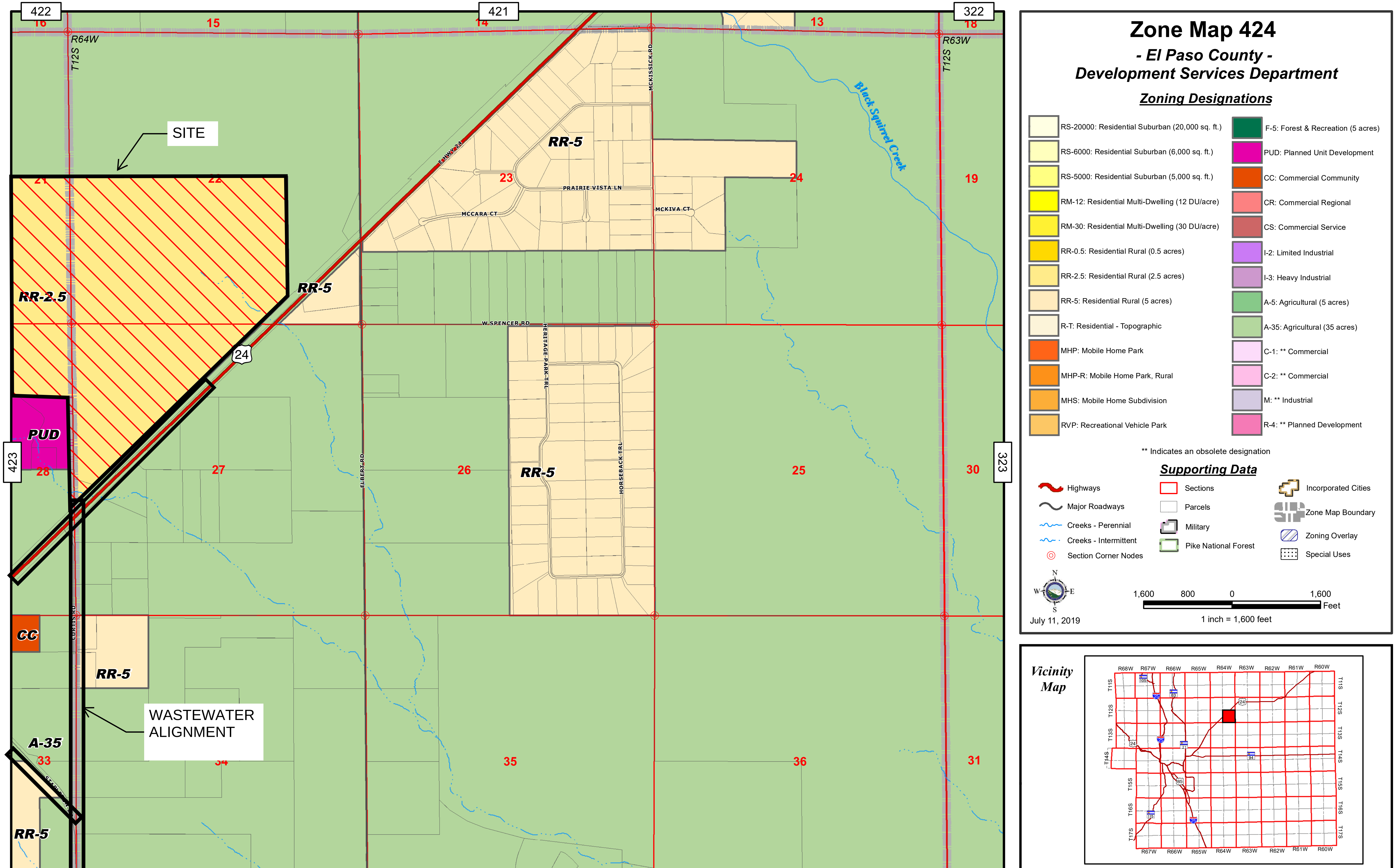
El Paso County Colorado

Data Source:
Coordinate System: NAD 1983 StatePlane Colorado Central FIPS 0502 Feet
Projection: Lambert Conformal Conic
Datum: North American 1983
Units: Foot US

HRGreen

HRG PLOT: 3:27:58 PM 2/20/2023 BY: cbudge FILE: J:\2020\201662.07\GIS\workingfile.mxd

EXHIBIT GG: EXISTING ZONING MAP


Zone Map 424
- El Paso County -
Development Services Department
Zoning Designations
RS-20000: Residential Suburban (20,000 sq. ft.)
RS-6000: Residential Suburban (6,000 sq. ft.)
RS-5000: Residential Suburban (5,000 sq. ft.)
RM-12: Residential Multi-Dwelling (12 DU/acre)
RM-30: Residential Multi-Dwelling (30 DU/acre)
RR-0.5: Residential Rural (0.5 acres)
RR-2.5: Residential Rural (2.5 acres)
RR-5: Residential Rural (5 acres)
R-T: Residential - Topographic
MHP: Mobile Home Park
MHP-R: Mobile Home Park, Rural
MHS: Mobile Home Subdivision
RVP: Recreational Vehicle Park
F-5: Forest & Recreation (5 acres)
PUD: Planned Unit Development
CC: Commercial Community
CR: Commercial Regional
CS: Commercial Service
I-2: Limited Industrial
I-3: Heavy Industrial
A-5: Agricultural (5 acres)
A-35: Agricultural (35 acres)
C-1: ** Commercial
C-2: ** Commercial
M: ** Industrial
R-4: ** Planned Development
** Indicates an obsolete designation
Supporting Data
Highways
Major Roadways
Creeks - Perennial
Creeks - Intermittent
Section Corner Nodes
Sections
Parcels
Military
Pike National Forest
Incorporated Cities
Zone Map Boundary
Zoning Overlay
Special Uses
1,600 800 0 1,600
Feet
July 11, 2019
1 inch = 1,600 feet
Vicinity Map
SITE
WASTEWATER ALIGNMENT
RR-2.5
RR-5
PUD
CC
A-35
Black Squirrel Creek
PRAIRIE VISTA LN
MCCARA CT
MCKIVA CT
MCKISSICK RD
W SPENCER RD
HERITAGE PARK TRL
HORSEBACK TRL
ELBERT RD
E HWY 24
24
R64W
R63W
T12S
422
421
322
423
323
432
431
332
16
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14
13
18
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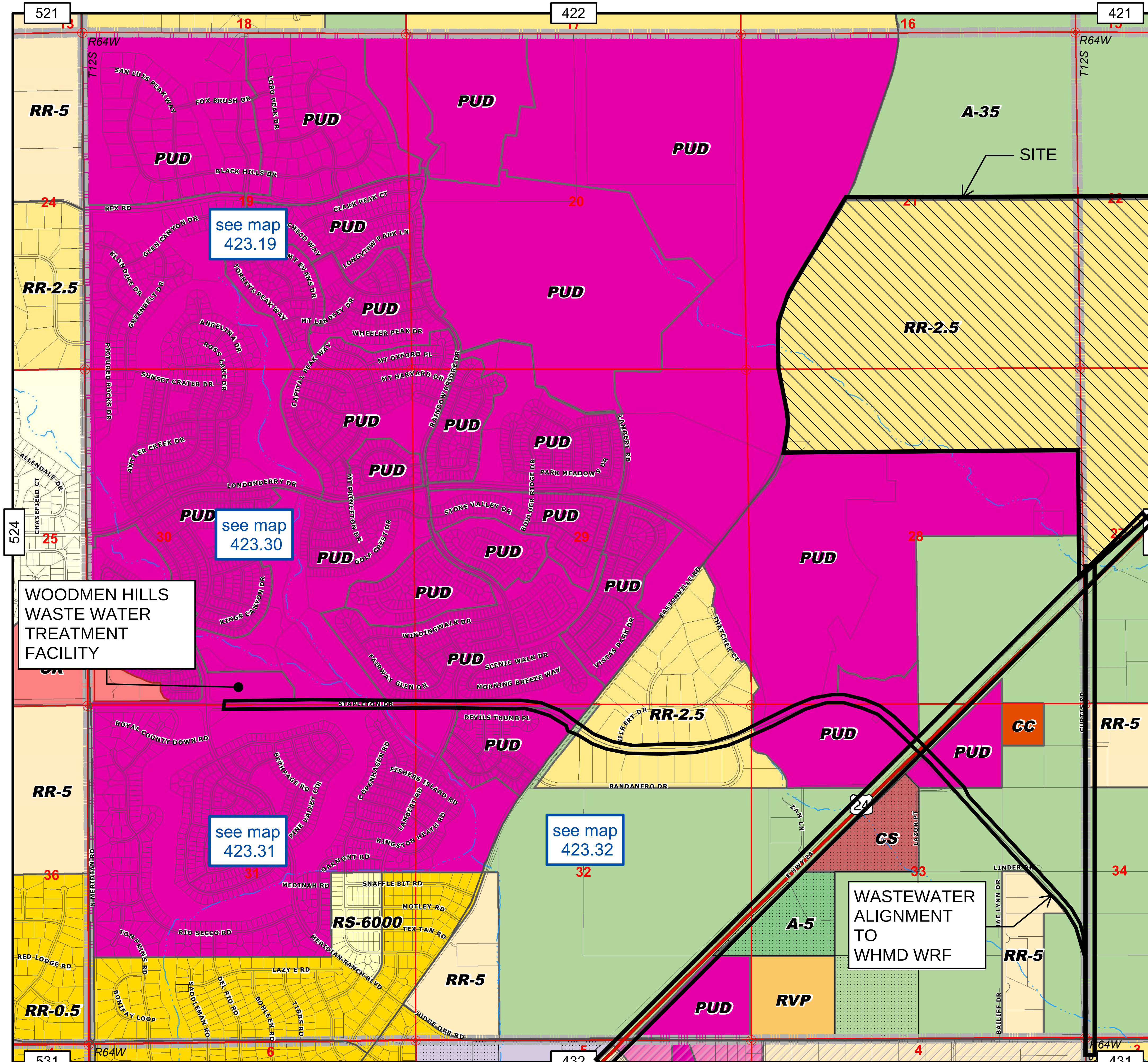
3
1

Zone Map 423

- El Paso County -
Development Services Department



Zoning Designations

- RS-20000: Residential Suburban (20,000 sq. ft.)
- RS-6000: Residential Suburban (6,000 sq. ft.)
- RS-5000: Residential Suburban (5,000 sq. ft.)
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- RM-30: Residential Multi-Dwelling (30 DU/acre)
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- RR-2.5: Residential Rural (2.5 acres)
- RR-5: Residential Rural (5 acres)
- R-T: Residential - Topographic
- MHP: Mobile Home Park
- MHP-R: Mobile Home Park, Rural
- MHS: Mobile Home Subdivision
- RVP: Recreational Vehicle Park
- F-5: Forest & Recreation (5 acres)
- PUD: Planned Unit Development
- CC: Commercial Community
- CR: Commercial Regional
- CS: Commercial Service
- I-2: Limited Industrial
- I-3: Heavy Industrial
- A-5: Agricultural (5 acres)
- A-35: Agricultural (35 acres)
- C-1: ** Commercial
- C-2: ** Commercial
- M: ** Industrial
- R-4: ** Planned Development

** Indicates an obsolete designation

Supporting Data

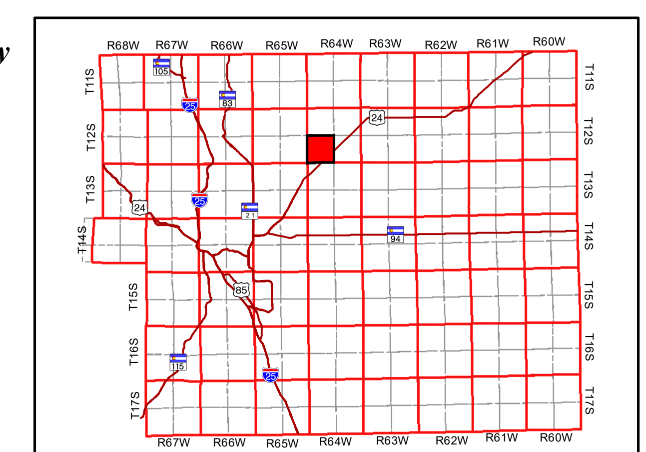
- Highways
- Major Roadways
- Creeks - Perennial
- Creeks - Intermittent
- Section Corner Nodes
- Sections
- Parcels
- Military
- Pike National Forest
- Incorporated Cities
- Zone Map Boundary
- Zoning Overlay
- Special Uses

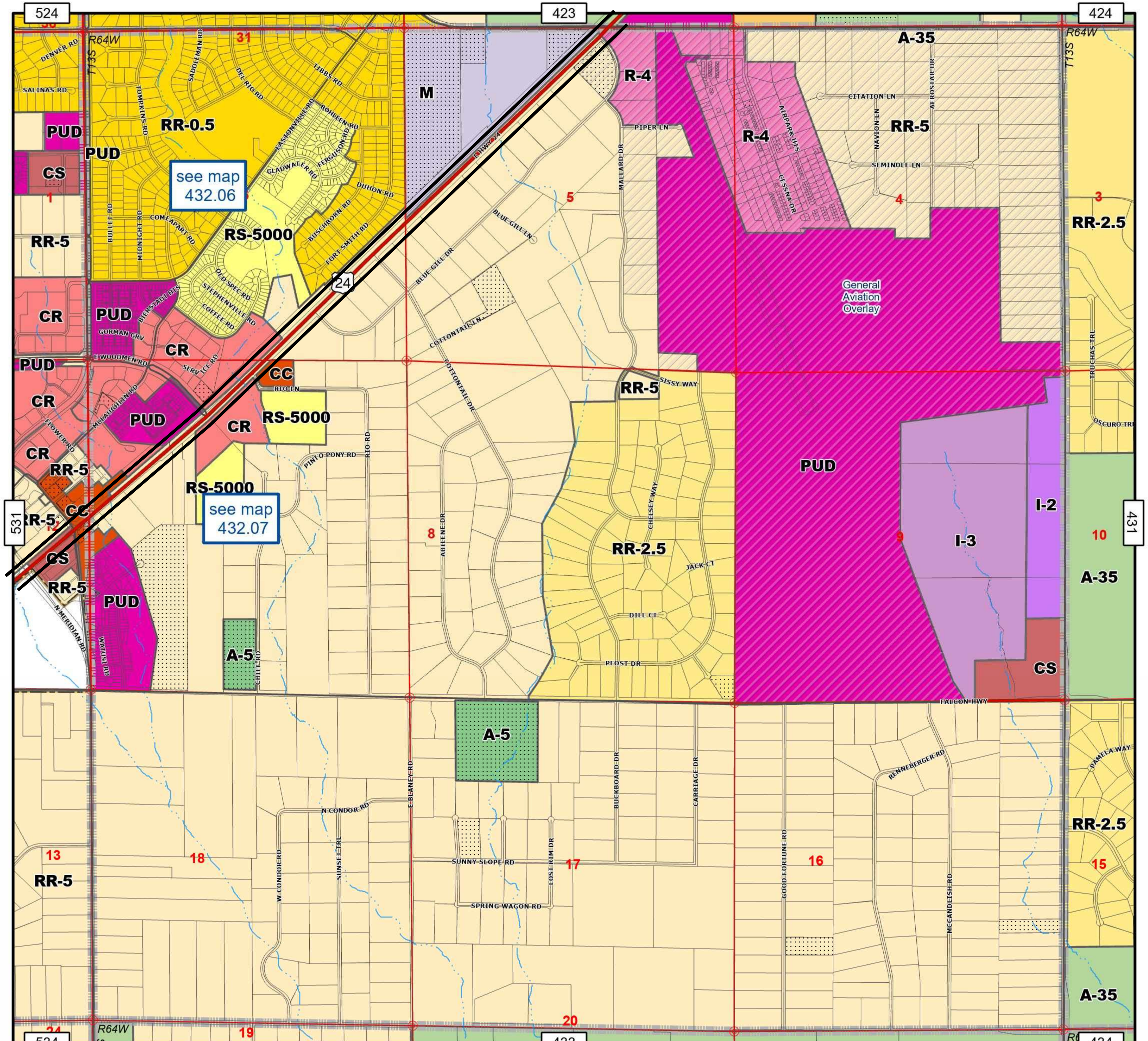
1,600 800 0 1,600 Feet

1 inch = 1,600 feet

January 11, 2021

Vicinity Map





Zone Map 432

- El Paso County -
Development Services Department

Zoning Designations

- RS-20000: Residential Suburban (20,000 sq. ft.)
- RS-6000: Residential Suburban (6,000 sq. ft.)
- RS-5000: Residential Suburban (5,000 sq. ft.)
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- RM-30: Residential Multi-Dwelling (30 DU/acre)
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- MHP-R: Mobile Home Park, Rural
- MHS: Mobile Home Subdivision
- RVP: Recreational Vehicle Park
- F-5: Forest & Recreation (5 acres)
- PUD: Planned Unit Development
- CC: Commercial Community
- CR: Commercial Regional
- CS: Commercial Service
- I-2: Limited Industrial
- I-3: Heavy Industrial
- A-5: Agricultural (5 acres)
- A-35: Agricultural (35 acres)
- C-1: ** Commercial
- C-2: ** Commercial
- M: ** Industrial
- R-4: ** Planned Development

** Indicates an obsolete designation

Supporting Data

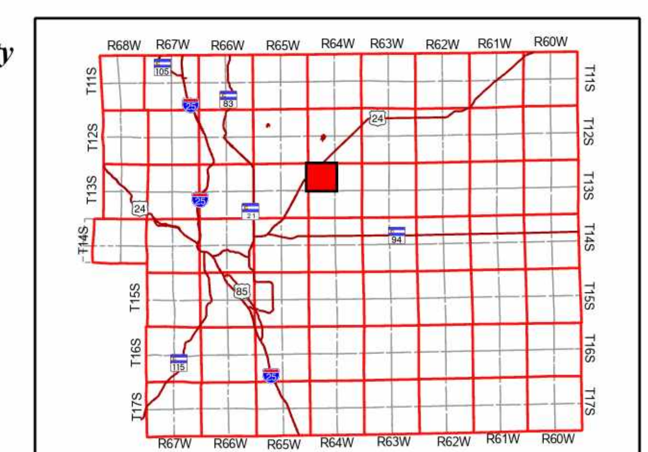
- Highways
- Major Roadways
- Creeks - Perennial
- Creeks - Intermittent
- Section Corner Nodes
- Sections
- Parcels
- Military
- Pike National Forest
- Incorporated Cities
- Zone Map Boundary
- Zoning Overlay
- Special Uses

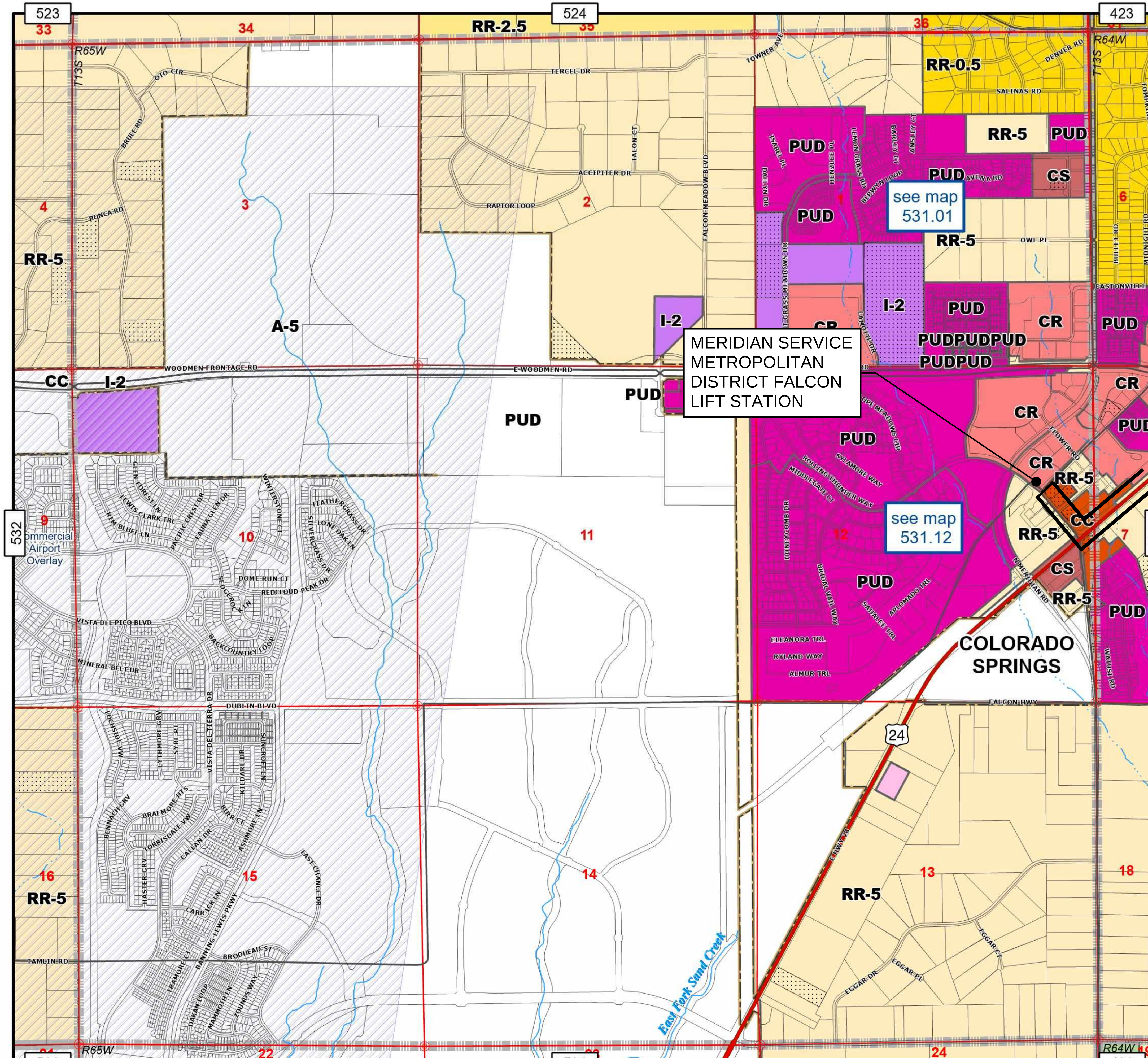
1,000 500 0 1,000 Feet

January 13, 2023

1:19,200

Vicinity Map





Zone Map 531

- El Paso County -
Development Services Department

Zoning Designations

- RS-20000: Residential Suburban (20,000 sq. ft.)
- RS-6000: Residential Suburban (6,000 sq. ft.)
- RS-5000: Residential Suburban (5,000 sq. ft.)
- RM-12: Residential Multi-Dwelling (12 DU/acre)
- RM-30: Residential Multi-Dwelling (30 DU/acre)
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- RR-2.5: Residential Rural (2.5 acres)
- RR-5: Residential Rural (5 acres)
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- F-5: Forest & Recreation (5 acres)
- PUD: Planned Unit Development
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- CR: Commercial Regional
- CS: Commercial Service
- I-2: Limited Industrial
- I-3: Heavy Industrial
- A-5: Agricultural (5 acres)
- A-35: Agricultural (35 acres)
- C-1: ** Commercial
- C-2: ** Commercial
- M: ** Industrial
- R-4: ** Planned Development

** Indicates an obsolete designation

Supporting Data

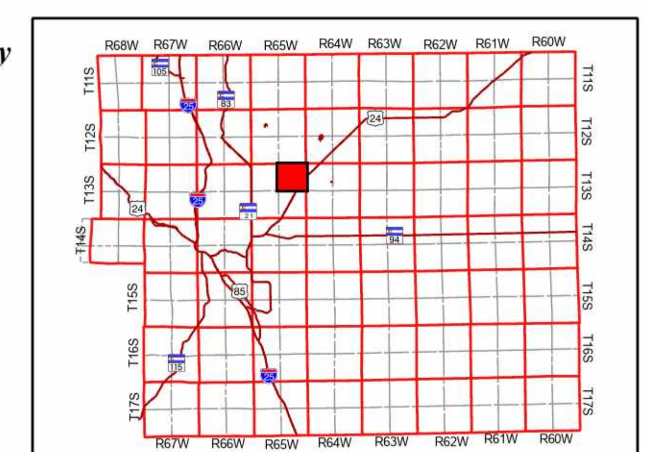
- Highways
- Major Roadways
- Creeks - Perennial
- Creeks - Intermittent
- Section Corner Nodes
- Sections
- Parcels
- Military
- Pike National Forest
- Incorporated Cities
- Zone Map Boundary
- Zoning Overlay
- Special Uses

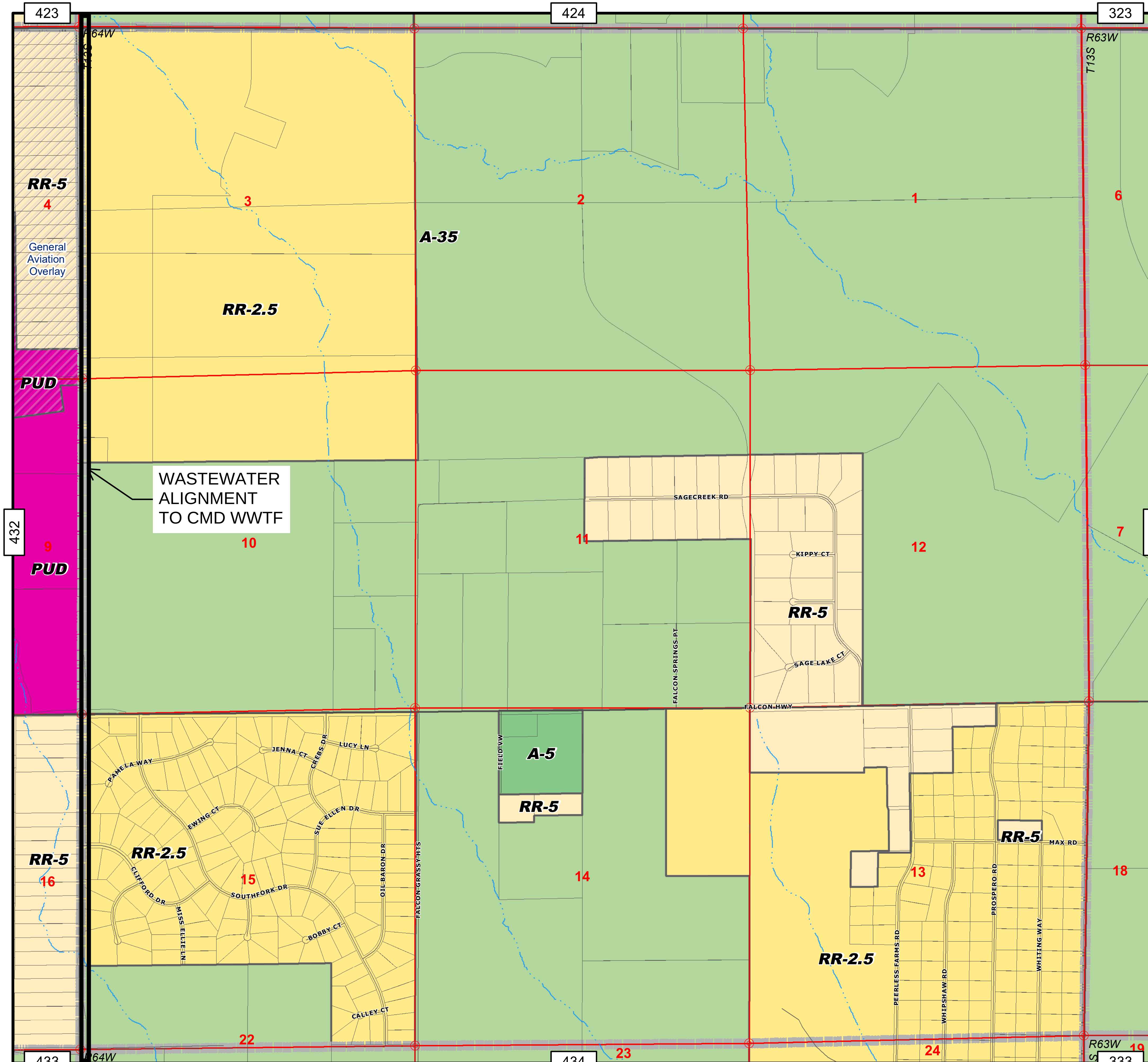
1,000 500 0 1,000 Feet

January 13, 2023

1:19,200

Vicinity Map





Zone Map 431

- El Paso County -
Development Services Department

Zoning Designations

- RS-20000: Residential Suburban (20,000 sq. ft.)
- RS-6000: Residential Suburban (6,000 sq. ft.)
- RS-5000: Residential Suburban (5,000 sq. ft.)
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- RVP: Recreational Vehicle Park
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- PUD: Planned Unit Development
- CC: Commercial Community
- CR: Commercial Regional
- CS: Commercial Service
- I-2: Limited Industrial
- I-3: Heavy Industrial
- A-5: Agricultural (5 acres)
- A-35: Agricultural (35 acres)
- C-1: ** Commercial
- C-2: ** Commercial
- M: ** Industrial
- R-4: ** Planned Development

** Indicates an obsolete designation

Supporting Data

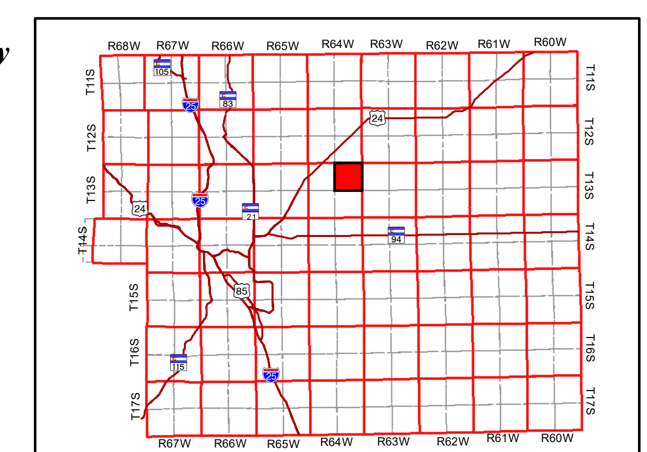
- Highways
- Major Roadways
- Creeks - Perennial
- Creeks - Intermittent
- Section Corner Nodes
- Sections
- Parcels
- Military
- Pike National Forest
- Incorporated Cities
- Zone Map Boundary
- Zoning Overlay
- Special Uses

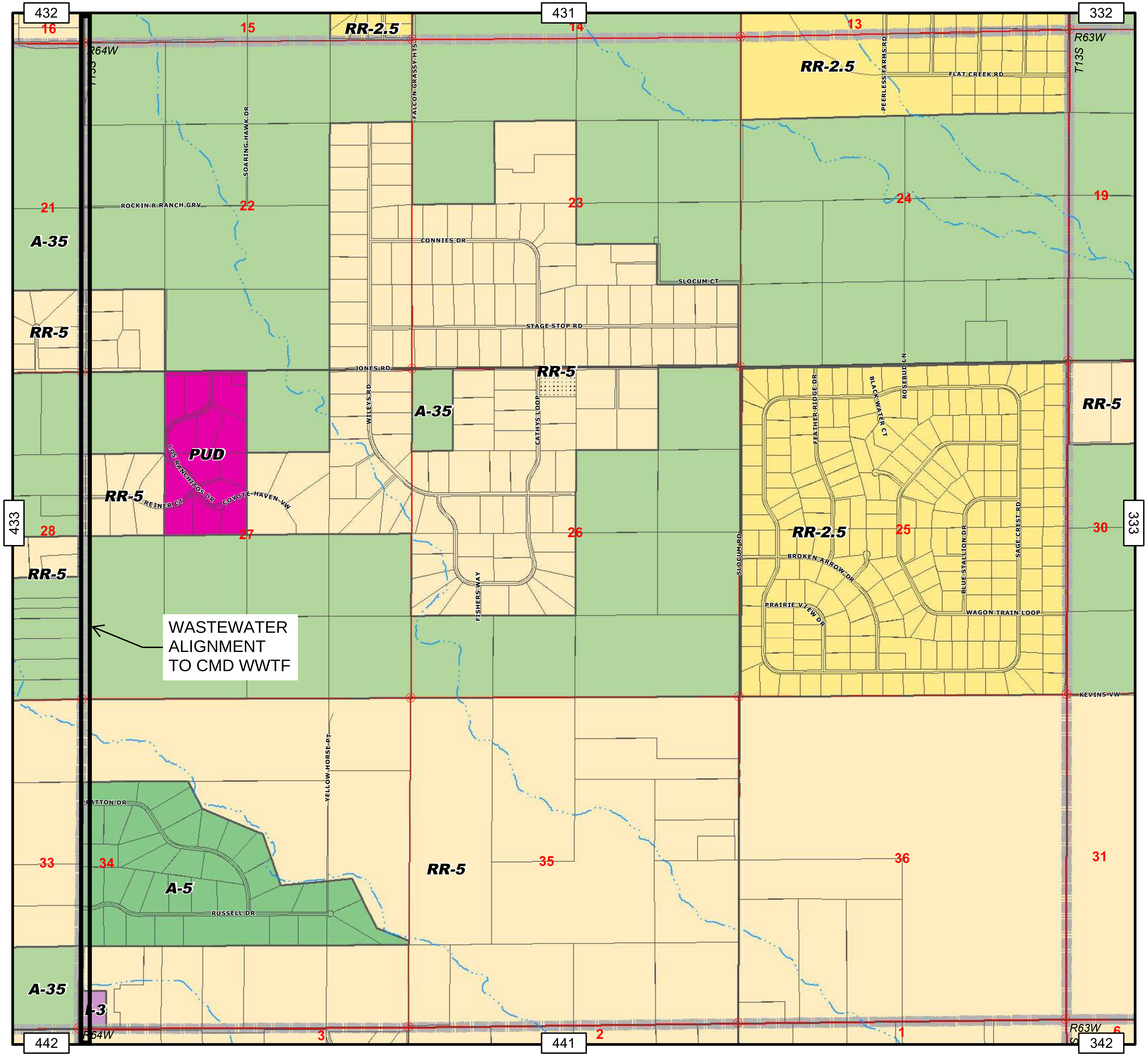
July 11, 2019

1,600 800 0 1,600 Feet

1 inch = 1,600 feet

Vicinity Map





Zone Map 434

- El Paso County -
Development Services Department

Zoning Designations

- RS-20000: Residential Suburban (20,000 sq. ft.)
- RS-6000: Residential Suburban (6,000 sq. ft.)
- RS-5000: Residential Suburban (5,000 sq. ft.)
- RM-12: Residential Multi-Dwelling (12 DU/acre)
- RM-30: Residential Multi-Dwelling (30 DU/acre)
- RR-0.5: Residential Rural (0.5 acres)
- RR-2.5: Residential Rural (2.5 acres)
- RR-5: Residential Rural (5 acres)
- R-T: Residential - Topographic
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- MHP-R: Mobile Home Park, Rural
- MHS: Mobile Home Subdivision
- RVP: Recreational Vehicle Park
- F-5: Forest & Recreation (5 acres)
- PUD: Planned Unit Development
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- CR: Commercial Regional
- CS: Commercial Service
- I-2: Limited Industrial
- I-3: Heavy Industrial
- A-5: Agricultural (5 acres)
- A-35: Agricultural (35 acres)
- C-1: ** Commercial
- C-2: ** Commercial
- M: ** Industrial
- R-4: ** Planned Development

** Indicates an obsolete designation

Supporting Data

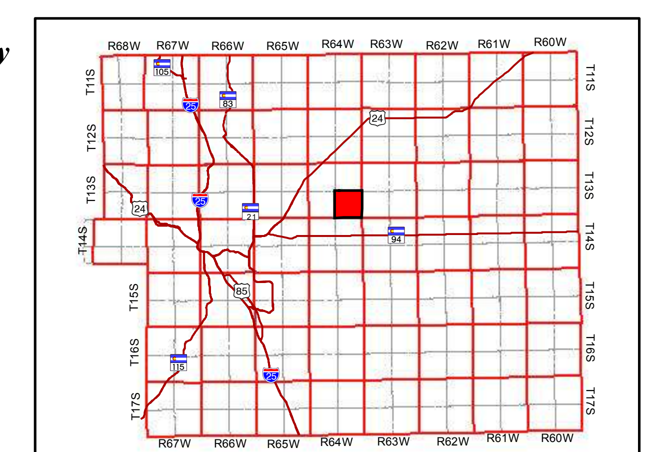
- Highways
- Major Roadways
- Creeks - Perennial
- Creeks - Intermittent
- Section Corner Nodes
- Sections
- Parcels
- Military
- Pike National Forest
- Incorporated Cities
- Zone Map Boundary
- Zoning Overlay
- Special Uses

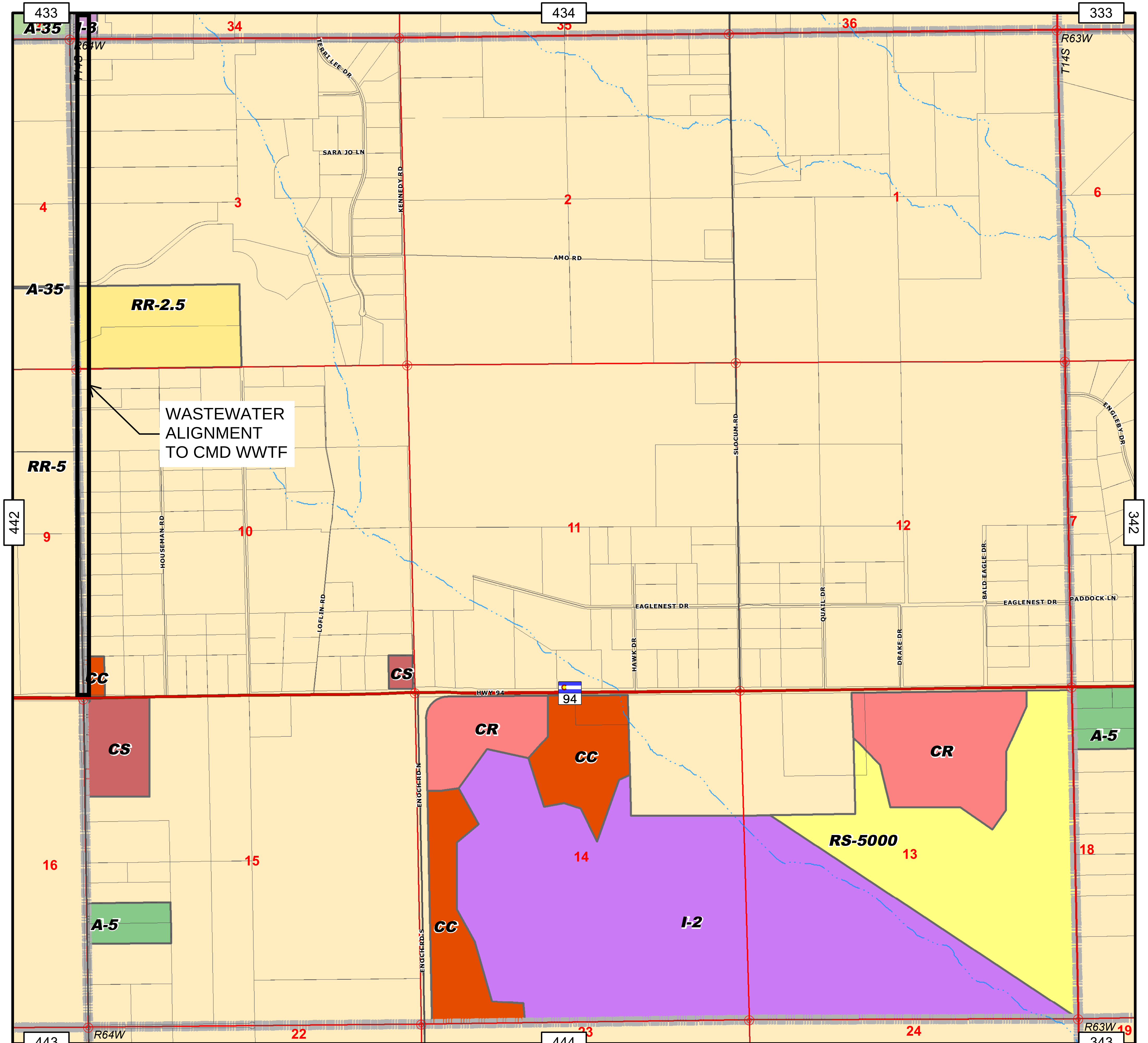
1,600 800 0 1,600 Feet

1 inch = 1,600 feet

May 25, 2016

Vicinity Map





Zone Map 441

- El Paso County -
Development Services Department

Zoning Designations

RS-20000: Residential Suburban (20,000 sq. ft.)	F-5: Forest & Recreation (5 acres)
RS-6000: Residential Suburban (6,000 sq. ft.)	PUD: Planned Unit Development
RS-5000: Residential Suburban (5,000 sq. ft.)	CC: Commercial Community
RM-12: Residential Multi-Dwelling (12 DU/acre)	CR: Commercial Regional
RM-30: Residential Multi-Dwelling (30 DU/acre)	CS: Commercial Service
RR-0.5: Residential Rural (0.5 acres)	I-2: Limited Industrial
RR-2.5: Residential Rural (2.5 acres)	I-3: Heavy Industrial
RR-5: Residential Rural (5 acres)	A-5: Agricultural (5 acres)
R-T: Residential - Topographic	A-35: Agricultural (35 acres)
MHP: Mobile Home Park	C-1: ** Commercial
MHP-R: Mobile Home Park, Rural	C-2: ** Commercial
MHS: Mobile Home Subdivision	M: ** Industrial
RVP: Recreational Vehicle Park	R-4: ** Planned Development

** Indicates an obsolete designation

Supporting Data

Highways	Sections	Incorporated Cities
Major Roadways	Parcels	Zone Map Boundary
Creeks - Perennial	Military	Zoning Overlay
Creeks - Intermittent	Pike National Forest	Special Uses
Section Corner Nodes		

1,600 800 0 1,600 Feet

1 inch = 1,600 feet

April 14, 2021

Vicinity Map

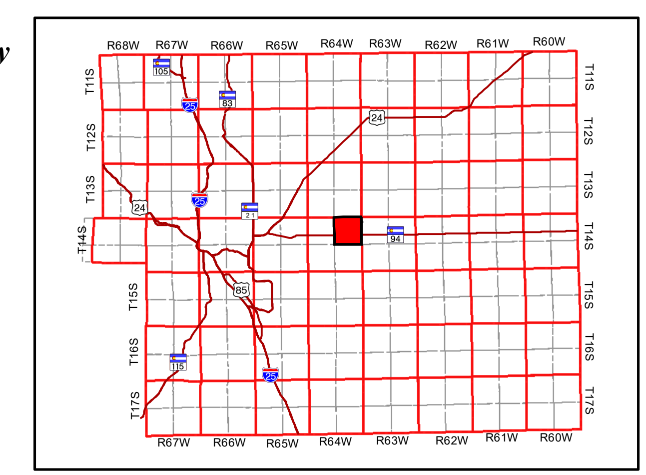
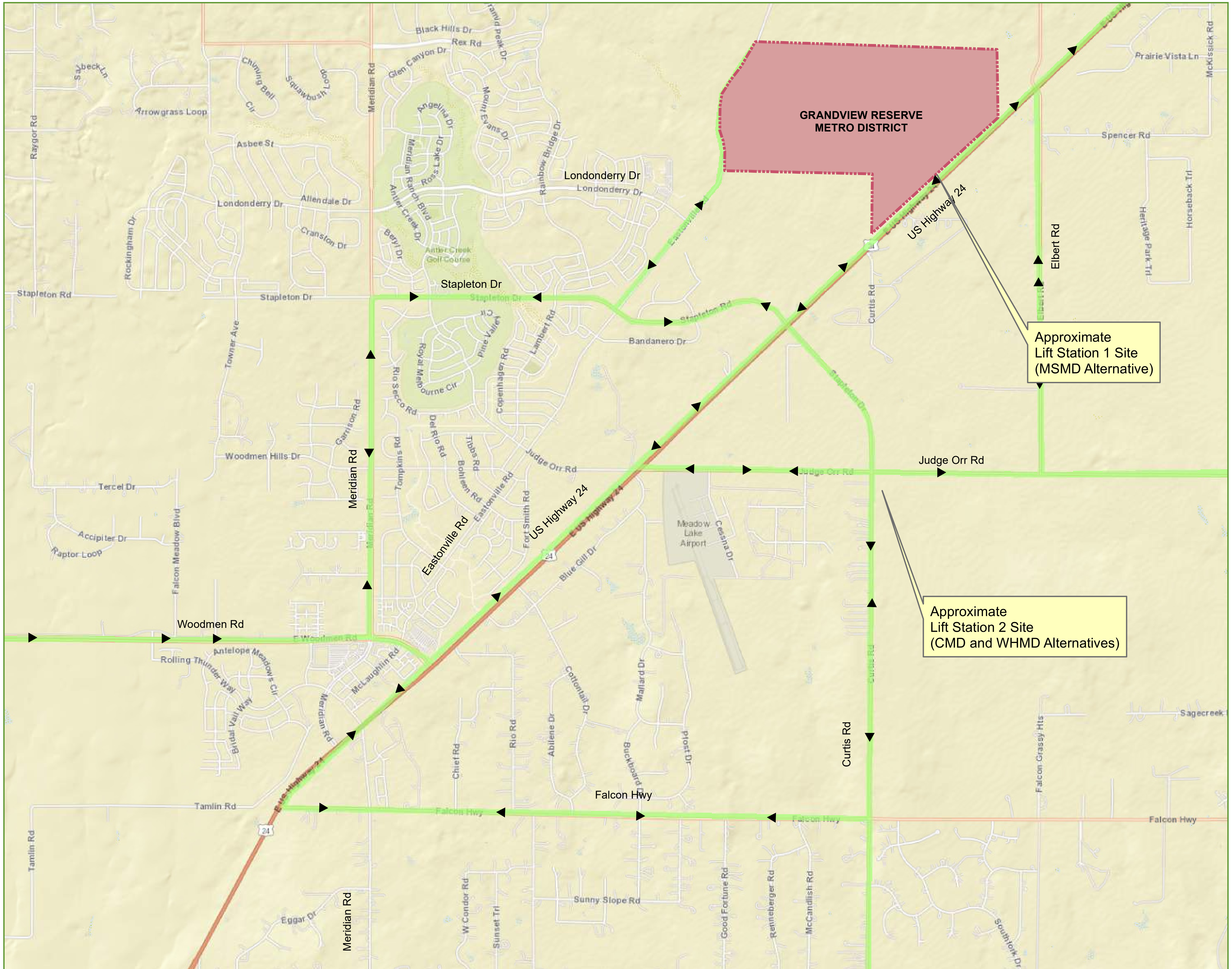


EXHIBIT HH: HAUL ROUTE EXHIBIT



Legend

Proposed Grandview Project Area

Preliminary Haul Route

Haul anticipated in both directions

Notes:

The proposed preliminary haul routes are for legal loads only. Any oversized or overweight loads will require a specific permit.

As projects are contracted out, different haul routes may be proposed by the applicant to EPC.

These preliminary haul routes are for construction of infrastructure covered by the 1041 permit only.

0 2,250 4,500 6,750 Feet

1 inch = 3,946 feet

N

Haul Route Exhibit

Grandview Reserve Metropolitan District 1041

HRGreen
1975 Research Parkway Suite 230
Colorado Springs, CO 80920
Phone: 719.300.4140

		DATE: 12/5/2023
		DRAWN BY: SJF
HRG JOB NO: 201662	**APPROVED BY:** MTV	**DESIGNED BY:** SJF

HRGJ:\2020\201662\GIS\Haul Route Exhibit 2.mxd Plotted: 12/5/2023 at 3:56:52 PM by cbudge

Legend

Proposed Grandview Project Area

Preliminary Haul Route
Haul anticipated in both directions

Notes:

The proposed preliminary haul routes are for legal loads only. Any oversized or overweight loads will require a specific permit.

As projects are contracted out, different haul routes may be proposed by the applicant to EPC.

These preliminary haul routes are for construction of infrastructure covered by the 1041 permit only.

0 2,800 5,600 8,400 Feet
1 inch = 5,000 feet
N

Haul Route Exhibit

Grandview Reserve Metropolitan District 1041

HRGreen 1975 Research Parkway Suite 230 Colorado Springs, CO 80920 Phone: 719.300.4140		**DATE:** 12/5/2023 **DRAWN BY:** SJF
HRG JOB NO: 201662	**APPROVED BY:** MTV	**DESIGNED BY:** SJF

HRGJ:\2020\201662\GIS\Haul Route Exhibit.mxd Plotted: 12/5/2023 at 4:09:40 PM by cbudge

EXHIBIT II: SERVICE AREA FOR WOODMEN ALTERNATIVE

JDS-HYDRO CONSULTANTS, INC.
5540 TECH CENTER DR., SUITE 100
COLORADO SPRINGS, COLORADO 80919
(719) 227-0072

EXHIBIT B

PARCEL OUTLINE

REVISIONS				
NO.	DESCRIPTION	BY	APP.	DATE
1				
2				
3				
4				
5				
6				
7				

Project No.: 112.122
Date: 12/01/22
Design: JLB
Drawn: JLB
Check: JPM

SHEET B OF

2022/12/01 1:26 PM By: Jeffrey Bray N:\Projects\112 Woodmen Hills\112.122 Grandview WW Agreement\Drawings\Exhibits\112122_SS_Basins.dwg

EXHIBIT JJ: WELL PERMITS

COLORADO
Division of Water Resources
Department of Natural Resources

WELL PERMIT NUMBER	**88211-F**
RECEIPT NUMBER	**10027733**

ORIGINAL PERMIT APPLICANT(S)

GRANDVIEW RESERVE METROPOLITAN DISTRICT NO. 1
(PAUL HOWARD)

APPROVED WELL LOCATION

Water Division: 2 Water District: 10
Designated Basin: UPPER BLACK SQUIRREL CREEK
Management District: UPPER BLACK SQUIRREL
County: EL PASO
Parcel Name: N/A
Physical Address: N/A

NE 1/4 NW 1/4 Section 28 Township 12.0 S Range 64.0 W Sixth P.M.

UTM COORDINATES (Meters, Zone:13, NAD83)

Easting: 537609.0 Northing: 4314956.6

PERMIT TO CONSTRUCT A NEW WELL

ISSUANCE OF THIS PERMIT DOES NOT CONFER A WATER RIGHT

CONDITIONS OF APPROVAL

1) This well shall be used in such a way as to cause no material injury to existing water rights. The issuance of this permit does not ensure that no injury will occur to another vested water right or preclude another owner of a vested water right from seeking relief in a civil court action.
2) The construction of this well shall be in compliance with the Water Well Construction Rules 2 CCR 402-2, unless approval of a variance has been granted by the State Board of Examiners of Water Well Construction and Pump Installation Contractors in accordance with Rule 18.
3) Approved pursuant to CRS 37-90-107(7) and the Findings and Orders of the Colorado Ground Water Commission dated July 22, 2004 for Determination of Water Right No. 511-BD, December 3, 2008 Determination of Water Right No. 511-BD Amendment No. 1, and September 26, 2022 for Determination of Water Right No. 511-BD Amendment No. 2.
4) The pumping rate of this well shall not exceed 100 GPM.
5) Production from this well is restricted to the Arapahoe aquifer, which corresponds to the interval between 1,210 feet and 1,675 feet below the ground surface.
6) The allowed average annual amount of groundwater that may be withdrawn by this well under this permit may not exceed 1,400 acre-feet, subject to the conditions of Determination of Water Right no. 511-BD and Amendment No. 2 including but not limited to the allowed maximum annual amount of withdrawal.
7) The total amount of groundwater that may be withdrawn by this well under this permit may not exceed a volume of 140,000 acre-feet, subject to the conditions of Determination of Water Right no. 511-BD and Amendment No. 2.
8) The use of groundwater from this well is limited to domestic, livestock watering, lawn irrigation, commercial, industrial, replacement, augmentation and municipal use by Four-Way Ranch Metropolitan District and the Woodman Hills Metropolitan District; and all municipal purposes by the Grandview Reserve Metropolitan District No. 1 including: domestic, agricultural, stock watering, irrigation, commercial, industrial, manufacturing, fire protection, power generation, wetlands, piscatorial, and wildlife, either directly or after storage. The place of use shall be limited to the 8,095-acre land area and the service area of the Woodman Hills Metropolitan District within the Upper Black Squirrel Creek Designated Groundwater Basin claimed in the above described Order of the Commission dated December 3, 2008 for Amendment No. 1.
9) No more than 98% of the groundwater withdrawn annually shall be consumed. The Commission may require well owners to demonstrate periodically that no more than 98% of the water withdrawn is being consumed.
10) The owner shall mark the well in a conspicuous location with the well permit number and name of aquifer as appropriate, and shall take necessary means and precautions to preserve these markings.
11) The entire length of the hole shall be geophysically logged as required by Rule 9 of the Statewide Nontributary Ground Water Rules prior to installing casing.
12) A totalizing flow meter or Commission approved measuring device must be installed on this well and maintained in good working order. Permanent records of all diversions must be maintained by the well owner (collected at least annually) and submitted to the Upper Black Squirrel Creek Ground Water Management District and the Ground Water Commission upon request.
13) This well shall be constructed within 200 feet of the location specified on this permit. This well shall not be located within 600 feet of another large-capacity well completed in the Arapahoe aquifer.

14) ADVANCE NOTICE REQUIRED - Pursuant to Construction Rule 6.2.2.1 (2 CCR 402-2), licensed or private drillers and pump installers must provide advance notification (by 11:59 pm the day before) to the State Engineer prior to each of the following for this well: the start of well construction, the initial installation of the first permanent pump, and the initial installation of a cistern connected to the water well supply system. Any change in the date of construction/installation must be re-noticed prior to the activity (by 11:59 pm the day before). Information regarding the notification process and a link to the electronic notification form can be found on the Division of Water Resources website at dwr.colorado.gov

NOTE: This well is withdrawing water from a non-renewable aquifer. While the withdrawals from this aquifer are administered based on a 100 year aquifer life, water level declines may prevent this well from diverting the permitted amounts for that 100 years.

NOTE: This well is located within the Upper Black Squirrel Creek Ground Water Management District where local District Rules apply which may further limit the withdrawal and use of designated ground water as authorized under this permit.

NOTE: This well will be completed in a Type 1 aquifer overlain by multiple confining layers and must be constructed with solid steel casing and grouted in accordance with Well Construction Rule 10.4.5.2 (2 CCR 402-2).

NOTE: This permit will expire on the expiration date unless the well is constructed by that date. A Well Construction and Yield Estimate Report (GWS-31) must be submitted to the Division of Water Resources to verify the well has been constructed. A one-time extension of the expiration date may be available. Contact the DWR for additional information or refer to the extension request form (GWS-64). Upon installation of the pump, a Pump Installation and Production Equipment Test Report (GWS-32) must be submitted to the Division of Water Resources. In addition, a Notice of Commencement of Beneficial Use (GWS-19) must be filed with the Division of Water Resources by the well owner within 30-days after first commencement of use. Forms are available at: dwr.colorado.gov

Wenli Dickinson

Issued By WENLI DICKINSON

Date Issued: 6/22/2023

Expiration Date: N/A

COLORADO
Division of Water Resources
Department of Natural Resources

WELL PERMIT NUMBER **88240-F**

RECEIPT NUMBER **10027734**

ORIGINAL PERMIT APPLICANT(S)

GRANDVIEW RESERVE METROPOLITAN DISTRICT NO. 1
(PAUL HOWARD)

APPROVED WELL LOCATION

Water Division: 2	Water District: 10
Designated Basin:	UPPER BLACK SQUIRREL CREEK
Management District:	UPPER BLACK SQUIRREL
County:	EL PASO
Parcel Name:	N/A
Physical Address:	N/A

NE 1/4 NW 1/4 Section 28 Township 12.0 S Range 64.0 W Sixth P.M.

UTM COORDINATES (Meters, Zone:13, NAD83)

Easting: 537607.1 Northing: 4314958.4

PERMIT TO CONSTRUCT A NEW WELL

ISSUANCE OF THIS PERMIT DOES NOT CONFER A WATER RIGHT

CONDITIONS OF APPROVAL

1) This well shall be used in such a way as to cause no material injury to existing water rights. The issuance of this permit does not ensure that no injury will occur to another vested water right or preclude another owner of a vested water right from seeking relief in a civil court action.

2) The construction of this well shall be in compliance with the Water Well Construction Rules 2 CCR 402-2, unless approval of a variance has been granted by the State Board of Examiners of Water Well Construction and Pump Installation Contractors in accordance with Rule 18.

3) Approved pursuant to CRS 37-90-107(7) and the Findings and Orders of the Colorado Ground Water Commission dated July 22, 2004 for Determination of Water Right No. 510-BD, December 3, 2008 for Determination of Water Right No. 510-BD Amendment No. 1, and September 26, 2022 for Determination of Water Right No. 510-BD Amendment No. 2.

4) The pumping rate of this well shall not exceed 150 GPM.

5) The allowed average annual amount of groundwater that may be withdrawn by this well under this permit may not exceed 1,312.5 acre-feet, subject to the conditions of the above referenced Findings and Orders, including but not limited to the allowed maximum annual amount of withdrawal.

6) The total amount of groundwater that may be withdrawn by this well under this permit may not exceed a volume of 131,250 acre-feet, subject to the conditions of the above referenced Findings and Orders.

7) The use of groundwater from this well is limited to domestic, livestock watering, lawn irrigation, commercial, industrial, replacement, augmentation and municipal use by Four-Way Ranch Metropolitan District and the Woodman Hills Metropolitan District; and all municipal purposes by the Grandview Reserve Metropolitan District No. 1 including: domestic, agricultural, stock watering, irrigation, commercial, industrial, manufacturing, fire protection, power generation, wetlands, piscatorial, and wildlife, either directly or after storage. The place of use shall be limited to the 8,095-acre land area and the service area of the Woodman Hills Metropolitan District within the Upper Black Squirrel Creek Designated Groundwater Basin claimed in the above described Order of the Commission dated December 3, 2008 for Amendment No. 1.

8) Production from this well is limited to the Laramie-Fox Hills aquifer which is located approximately 2,025 feet below ground surface and extends to a depth of approximately 2,290 feet. In accordance with Rule 10.4.8 of the Water Well Construction Rules, plain steel casing must be installed and grouted from the top of the permitted production zone up to at least ten feet above the base of the surface casing, or to the depth required by Rule 10.5.2.1, if no surface casing is installed. (NOTE: If coals and/or carbonaceous shales are encountered in the borehole, plain casing and grout should be installed through these intervals to exclude poor quality water from entering the well.)

9) The owner shall mark the well in a conspicuous location with the well permit number and name of aquifer as appropriate, and shall take necessary means and precautions to preserve these markings.

10) A totalizing flow meter or Commission approved measuring device must be installed on this well and maintained in good working order. Permanent records of all diversions must be maintained by the well owner (collected at least annually) and submitted to the Upper Black Squirrel Creek Ground Water Management District and the Ground Water Commission upon request.

11) The entire length of the hole shall be geophysically logged as required by Rule 9 of the Statewide Nontributary Ground Water Rules prior to installing casing.

12) This well shall be constructed within 200 feet of the location specified on this permit. This well shall not be located within 600 feet of another large-capacity well completed in the Laramie-Fox Hills aquifer.

13) No more than 98% of the groundwater withdrawn annually shall be consumed. The Commission may require well owners to demonstrate periodically that no more than 98% of the water withdrawn is being consumed.

14) ADVANCE NOTICE REQUIRED - Pursuant to Construction Rule 6.2.2.1 (2 CCR 402-2), licensed or private drillers and pump installers must provide advance notification (by 11:59 pm the day before) to the State Engineer prior to each of the following for this well: the start of well construction, the initial installation of the first permanent pump, and the initial installation of a cistern connected to the water well supply system. Any change in the date of construction/installation must be re-noticed prior to the activity (by 11:59 pm the day before). Information regarding the notification process and a link to the electronic notification form can be found on the Division of Water Resources website at dwr.colorado.gov

NOTE: This well is withdrawing water from a non-renewable aquifer. While the withdrawals from this aquifer are administered based on a 100 year aquifer life, water level declines may prevent this well from diverting the permitted amounts for that 100 years.

NOTE: This well is located within the Upper Black Squirrel Creek Ground Water Management District where local District Rules apply which may further limit the withdrawal and use of designated ground water as authorized under this permit.

NOTE: This permit will expire on the expiration date unless the well is constructed by that date. A Well Construction and Yield Estimate Report (GWS-31) must be submitted to the Division of Water Resources to verify the well has been constructed. A one-time extension of the expiration date may be available. Contact the DWR for additional information or refer to the extension request form (GWS-64). Upon installation of the pump, a Pump Installation and Production Equipment Test Report (GWS-32) must be submitted to the Division of Water Resources. In addition, a Notice of Commencement of Beneficial Use (GWS-19) must be filed with the Division of Water Resources by the well owner within 30-days after first commencement of use. Forms are available at: dwr.colorado.gov

Wenli Dickinson

Issued By WENLI DICKINSON

Date Issued: 6/27/2023

Expiration Date: 6/27/2024